

RESPONSE TO EPA COST COMMENTS

PURPOSE

The purpose of this memorandum is to provide additional cost backup information as requested in the U.S. Environmental Protection Agency (EPA) September 10, 2013 email (EPA 2013). The cost backup information request pertains to Appendix K (Cost Estimates) of the Draft Lower Willamette Group Feasibility Study (draft FS) submitted to the EPA for review on March 30, 2013 (Anchor QEA 2013). EPA requested cost backup, including vendor quotes on material prices, assumptions used in determining unit costs for construction tasks, as well as more information on the present worth analysis for operations, maintenance, and monitoring tasks.

Other elements of EPA's backup requests include a request for additional data tables to summarize cost and quantity information on a more refined level than previously presented. EPA is requesting additional cost and quantity data tables on the sub-Sediment Management Areas (SMAs). In order to streamline efforts and provide useful data to EPA, this submittal includes a draft template of the EPA-requested data tables. These draft tables currently include "dummy" data that, after EPA approval of the table format, will be populated with actual cost data and submitted to the EPA within 45 days of EPA approval.

COST BACKUP

Unit Costs Buildups

To estimate construction costs, unit costs were calculated for a variety of construction elements. Table 1 presents the unit cost summary used in the draft FS. Section 2.3 of Appendix K of the draft FS describes how the unit costs were developed. These unit cost buildups are included with the tables attached to this memorandum and are listed in the table of contents of the attached tables. Tables 2 through 26 present the unit cost buildup for different construction elements. Unit costs were estimated from the sum total of equipment, materials, and labor costs and then normalized by the assumed production rate.

- Equipment
 - Equipment pricing was obtained from Rental Rate Blue Book for Construction Equipment (version 2008.1.1). Table 27 presents the used equipment rates.
- Labor
 - Labor rates are Davis-Bacon wage determinations issued by the Department of Labor for Multnomah County, Oregon (updated August 20, 2010). Table 28 presents the used labor rates.
- Materials
 - Materials for construction equipment include miscellaneous expendable items specific to the construction task, including Personal Protection Equipment, Fuel-Oil-Grease, or equipment repairs (assumed to be a percent of the equipment costs).

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- Production Rates
 - The rates are assumed based on site conditions and experience. Section 2.3 of Appendix K details the assumed production rates for each construction element.
- Overhead and Profit
 - A 25-percent markup is applied to labor, materials, and equipment to account for overhead and profit.

Materials Costs

Quotes were received from a Portland-area vendor for the purchase and transport of engineered cap materials, residuals cover material, and organoclay mat material. Table 29A presents the cost buildup for the purchase and transport costs for cap materials. Table 29B presents the vendor quote.

Indirect Construction Costs

Unit cost backup for the following indirect construction tasks are included in Table 30.

- Daily oversight and project management including environmental monitoring
- Engineering support during construction

These, and other indirect construction costs, including Daily Agency Oversight and Project Management are discussed in more detail in Section 2.1.1 of Appendix K of the draft FS.

PRESENT VALUE ANALYSES

For clarity, EPA reviewers requested additional information in regards to the present value analysis and, specifically, additional information on present value analyses for Long Term Monitoring, Maintenance, and Operations and Institutional Controls, and the discount factors associated with these elements.

Direct Construction Costs

Construction durations for the different alternatives vary significantly with the higher alternatives taking much longer. Within each alternative, assumptions were made concerning sequencing of the SMAs (see Section 7.5 of the draft FS). For direct construction elements like dredging and capping, discount factors for construction operations were applied on a SMA basis for each alternative, based on the year the SMA work was implemented. Discount factors for construction in the first SMA began at year 1. Discount factors for each subsequent SMA remediated under each alternative are summarized in Table 2 of Appendix K of the draft FS.

Long Term Monitoring, Maintenance, and Operations and Institutional Controls

Assumptions for Long Term Monitoring, Maintenance, and Operations (LTMMO) costs are discussed in Appendix K (Section 2.1.1) and Appendix T (Section 3.4) of the draft FS. Assumptions for Institutional Controls (IC) costs are discussed in Appendix K (Section 2.4) of

the draft FS. Together, these elements sum to the LTMMO costs presented in Table 2 of Appendix K of the draft FS.

- For alternatives associated with remedial action levels B, C, D, and E, LTMMO and IC costs were assumed to occur following the completion of all construction activities.
- For alternatives associated with remedial action level F, construction durations were typically greater than 10 years, so it was assumed that monitoring events for the previously completed SMAs would occur prior to the completion of remedial activities for all SMAs. Discount factors for LTMMO and IC costs were calculated for each alternative, assuming that the first monitoring event would occur within a few years after the midpoint of the total duration of the alternative. Table 31 provides the assumptions necessary to calculate discount factors for LTMMO and IC costs.

In order to provide an estimate of LTMMO and IC costs on a SMA level, these costs were distributed among the SMAs based on the size of the remedial area for each SMA.

SUPPLEMENTAL COST TABLES

EPA is requesting additional cost and quantity data tables to the detail of the sub-SMA to assist with their evaluation. A complete set of all cost and quantity data has already been provided to the EPA in the form of an Excel spreadsheet (Attachment 1 of Appendix K of the draft FS). However, the requested table will present the requested data in a more focused form.

There are over 3,200 sub-SMAs, each with its own cost estimate for each of the ten action alternatives. Due to the high level of detail associated with this request, this submittal includes a template table showing the proposed format of the sub-SMA data presentation (Table 32) for EPA review and approval to help avoid unnecessary iterations of these highly detailed tables. This draft table includes “dummy” values that, after EPA approval, will be populated with actual quantity and cost data, and submitted to the EPA within 45 days of EPA approval. LWG proposes that the draft template table have the following properties:

- One table will be provided for each action alternative (B, C, D, E, and F).
- To streamline review efforts, sub-SMAs will be organized from the highest cost to the lowest for each alternative.
- Separate columns will be provided for costs and quantities for the removal and in situ treatment-focused options under each alternative.

LIST OF TABLES

Table #	Title
1.	Unit Cost Summary
2.	Debris Removal and Disposal (Item No. 3.1)
3.	Pile Removal (Item No. 3.2)

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4. Pile Replacement (Item No. 3.3)
5. Temporary Dock Relocation (Item No. 3.4)
6. Temporary Sheetpile Walls (Item No. 5.2)
7. Silt Curtain Installation (Item No. 5.1)
8. Open Water Dredging and Transport (Item No. 4.1)
9. Confined Dredging (Item No. 4.3)
10. Dredging from Shore and Transport (Item No. 4.2)
11. Residual Dredging (Item No. 4.4)
12. Stabilization (Item No. 6.3)
13. Scow Transportation (Item No. 6.1)
14. Hydraulic Offloading (Item No. 6.5)
15. Open Water Capping (Item No. 7.1)
16. EMNR Layer Placement (Item No. 7.1.1)
17. Residuals Cap Placement (Item No. 7.1.2)
18. Backfill Placement (Item No. 7.1.3)
19. Confined Underpier Capping (Item No. 7.2)
20. Confined EMNR Layer Placement (Item No. 7.2.1)
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22. Confined Backfill Placement (Item No. 7.2.3)
23. Organoclay Mat (Item No. 7.3)
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26. In Situ Treatment Cost Buildups
27. Equipment Rates
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- 29A Material Costs
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- 30 Indirect Construction Cost Buildup
- 31 Discount Factors for Long Term Monitoring, Maintenance and Operations Costs
- 32 Draft Template Table for EPA Comment: Cost and Quantity Estimates by sub-SMA

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REFERENCES

Anchor QEA (Anchor QEA, LLC), 2012. Portland Harbor RI/FS—Draft Feasibility Study (draft FS). Prepared for Lower Willamette Group. March 2012

EPA, 2013. Regarding: Request for backup cost information. Email from: C. Humphrey, EPA Region 10. Email to: Bob Wyatt and James McKenna. September 10, 2013.

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Table 1. Unit Cost Summary

Technology/Construction Task Element	Cost	Unit Type
Direct Construction Costs		
Mobilization and Demobilization (1)	15%	%
Debris Removal & Disposal	\$11,630	ACRE
Pile Removal & Disposal	\$635	PILE
Pile Replacement	\$6,636	PILE
Temporary Dock Relocation	\$89,173	DOCK
Dredging & Transport to Offloading Facility		
Water Quality Control Structures		
Purchase, Install and Maintain Silt Curtains	\$86	LF
Purchase, Install and Remove Sheet Pile Walls	\$2,440	LF
Dredging		
Open water	\$33.80	CY
Confined or shallow water	\$47.70	CY
Dredging from shore	\$41.60	CY
Residual Dredging	\$79.60	CY
Miscellaneous		
Stabilization	\$31.30	CY
Barge Transportation	\$126.00	MILE
Hydraulically Offloading	\$5.60	CY
Capping		
Material Purchase and Deliver		
Base Cap - Sand	\$14.60	TON
Armor A material	\$18.00	TON
Armor B material	\$18.00	TON
Armor C material	\$18.00	TON
Armor D material	\$18.00	TON
Armor ODOT 100 material	\$31.50	TON
Armor ODOT 200 material	\$31.50	TON
Cap Material Placement		
Open Water Placement		
Base Cap - Open Water	\$17.60	TON
Armor - Open Water	\$15.50	TON
Organoclay Mat - Open Water (Purchase and Place)	\$6.30	SF
EMNR Layer - Open Water	\$22.00	TON
Residuals Cap - Open Water	\$22.00	TON
Backfill - Open Water	\$17.60	TON
Confined or Under Pier Placement		
Base Cap	\$36.20	TON
Armor	\$32.00	TON
Organoclay Mat (Purchase and Place)	\$21.10	SF
EMNR Layer	\$45.30	TON
Residuals Cap	\$45.30	TON
Backfill	\$36.20	TON
In Situ Treatment		
In Situ Treatment - Open Water	\$4.50	SF
In Situ Treatment - Confined/Underpier	\$5.80	SF
DSL Land Purchase	\$142,877	ACRE
Mitigation (2)		
On site	\$2,260,000	ACRE
Off site	\$350,000	ACRE
Disposal		
Upland Subtitle D	\$79	TON
Upland Subtitle C	\$226	TON
In-Water CDF	\$87	CY
Total Direct Construction Costs (3)		
Indirect Construction Costs		
Design	15%	%
Daily Responsible Party oversight and project management	\$292,000	MONTHLY
Daily Agency Oversight and project management and Project Management including Environmental Monitoring	\$100,000	MONTHLY
Engineering Support During Construction	\$78,000	MONTHLY
Special Insurance, Bonding	5%	%
Total Indirect Construction Cost (4)		
Total Capital Costs (5)		
Contingency (6)	40%	%
Long Term Monitoring and Maintenance (7)		
ENGINEER'S OPINION OF PROBABLE COST(8)		

Notes:

General: With the exception of Long term Monitoring and Maintenance, sub-SMA Costs are presented for all Construction tasks included in this table.

(1) Mobilization and Demobilizations costs are a percentage of the Total Direct Construction Costs

(2) Mitigation Costs were determined on a SMA basis for each alternative. These costs were extrapolated to the sub-SMA level. Caution should be excercised interpreting these costs on a sub-SMA level.

(3) The Total Direct Construction Cost is defined as the sum of the Direct Construction Tasks listed above.

(4) The Total Indirect Construction Cost is defined as the sum of the Indirect Construction tasks listed above.

(5) The Total Capital Cost is the Sum of The Total Direct and Indirect Construction Costs

(6) The Contingency is defined as a percent of the Total Direct Construction Costs.

(7) Due to the nature of Long Term Monitoring activities, the Long Term Monitoring and Maintenance costs are calculated on an alternative wide basis. The costs are presented on an alternative and SMA basis for each alternative. Caution should be excercised interpreting these numbers on a SMA basis. Due to the relative size of Long term monitoring events, and the size of sub-SMAs, these costs are not extrapolated to the sub-SMA level. Refer to table 1 for Long Term Monitoring and Maintenance Costs.

(8) The Engineer's Opinion of Probable Cost is calculated for each sub-SMA, SMA, and Alternative. The sub-SMA level cost estimates presented in the Cost Tools Spreadsheet do not include modifications for a Net Present Value Analysis, or Long Term Monitoring and Maintenance Costs. Caution should be used interpreting sub-SMA level Cost Estimates.

Table 2. Debris Removal and Disposal

ESTIMATE WORKSHEET 3.1													
DEBRIS REMOVAL & DISPOSAL													
BID DATE		PROJECT LOCATION					DESCRIPTION OF ITEM					ITEM NO.	
												3.1	
						PRODUCTION DATA							
TOTAL QUANTITY ON PROPOSAL	2 Acre					HOURS PER SHIFT	SHIFTS PER DAY	DAYS PER WEEK	DAILY UNIT PRODUCTION RATE		DAYS REQ. TO COMPLETE		
QUANTITY						10	1	6	2		1		
ESTIMATE WORKSHEET		TOTAL LABOR		TOTAL MATERIAL		TOTAL EQUIPMENT	TOTAL RENTED EQUIPMENT		TOTAL SUB-CONTRACTOR		TOTAL		
WORKSHEET 3.1		\$4,516.20		\$3,614.00		\$0.00	\$5,076.00		\$750.00		\$13,956.20		
											\$0.00		
GRAND TOTALS		\$4,516.20		\$3,614.00		\$0.00	\$5,076.00		\$750.00		\$13,956.20		
UNIT PRICES		\$3,010.80		\$2,409.34		\$0.00	\$3,384.00		\$500.00				
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST		TOTAL COST					UNIT PRICE		\$9,304.14	
					UNIT OF MEASURE					Acre			
	Disposal Assumption	15	\$50.00		\$750.00					OH&P 25%	\$11,630		
					\$0.00								
					\$0.00								
					\$0.00								
					\$0.00								
BARE UNIT COST		\$500.00	TOTAL COST			\$750.00							
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HLRY RATE	TOTAL COST	OWN EQUIPMENT	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	HLRY RATE	TOTAL COST	
Crane Operator		1	10	\$51.00	\$510.00								
Oiler		1	10	\$50.00	\$500.00								
Captain	Tug	1	10	\$54.00	\$540.00								
Laborer		3	10	\$37.00	\$1,110.00								
Work Boat Labor		1	10	\$37.00	\$370.00								
Teamster		1	10	\$37.00	\$370.00								
Operator	Offload	1	10	\$46.00	\$460.00								
17% OT			0		\$656.20								
BARE UNIT COST		\$3,010.80	TOTAL LABOR COST			\$4,516.20	BARE UNIT COS \$0.00		0	TOTAL SES COST			\$0.00
MATERIAL / SERVICES		QUANTITY UNITS	UNIT COST		TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	HLRY RATE	TOTAL COST	
Fuel / Oil / Grease		405	\$4.00		\$1,620.00	150 Ton Crane	Removal	120	1	10	\$111.00	\$1,110.00	
PPE		9	\$15.00		\$135.00	Tug	Move	150	1	10	\$60.00	\$600.00	
Equipment Repair 7%		1	\$216.30		\$216.30	Work Boat		15	1	10	\$56.00	\$560.00	
Oil Boom (FT)		250	\$2.00		\$500.00	Scows	Debris	0	1	10	\$68.00	\$680.00	
Debris Curtain (FT)		250	\$3.50		\$875.00	Barge		0	1	10	\$54.00	\$540.00	
					\$0.00	PC 300 long front	Unload	60	1	10	\$50.00	\$500.00	
					\$0.00	Dump Truck	Move	60	1	10	\$32.00	\$320.00	
					\$0.00	Clam Buck (10 cy)		0	1	10	\$39.00	\$390.00	
					\$0.00			0		0	\$0.00	\$0.00	
					\$0.00			0		0	\$0.00	\$0.00	
					\$0.00			0		0	\$0.00	\$0.00	
					\$0.00			0		0	\$0.00	\$0.00	
					\$0.00			0		0	\$0.00	\$0.00	
					\$0.00			0		0	\$0.00	\$0.00	
					\$0.00			0		0	\$0.00	\$0.00	
TAX AT 8%					\$267.70	TAX 8%		0		0	\$0.00	\$376.00	
BARE UNIT COST		\$0.00	TOTAL MATERIAL COST			\$3,614.00	BARE UNIT COS \$0.00		405	TOTAL RENTED EQUIP			\$5,076.00

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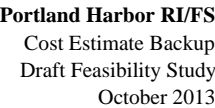
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Table 3. Pile Removal

ESTIMATE WORKSHEET 3.2												
PILE REMOVAL												
BID DATE		PROJECT LOCATION					DESCRIPTION OF ITEM				ITEM NO.	
											3.2	
							HOURS PER SHIFT	SHIFTS PER DAY	DAYS PER WEEK	DAILY UNIT PRODUCTION RATE		DAYS REQ. TO COMPLETE
TOTAL QUANTITY ON PROPOSAL	25 EA											
QUANTITY							10	1	6	25		1
ESTIMATE WORKSHEET		TOTAL LABOR			TOTAL MATERIAL		TOTAL EQUIPMENT	TOTAL RENTED EQUIPMENT		TOTAL SUB-CONTRACTOR		TOTAL
		\$3,510.00			\$3,651.80			\$4,287.60		\$1,250.00		\$12,699.40
GRAND TOTALS		\$3,510.00			\$3,651.80		\$0.00	\$4,287.60		\$1,250.00		\$12,699.40
UNIT PRICES		\$140.40			\$146.07		\$0.00	\$171.50		\$50.00		
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST		TOTAL COST					UNIT PRICE		\$507.98
										UNIT OF MEASURE		EA
										OH&P 25%		\$635
Pile Disposal		25	\$50.00		\$1,250.00							
					\$0.00							
					\$0.00							
					\$0.00							
					\$0.00							
					\$0.00							
BARE UNIT COST \$50.00		TOTAL COST \$1,250.00										
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	OWN EQUIPMENT	WORK TO PERFORM	FUEL GAL.	TOTAL UNITS	TOTAL HOURS	HRLY RATE	TOTAL COST
Crane Operator		1	10	\$51.00	\$510.00			0		0	\$0.00	\$0.00
Operator		2	10	\$46.00	\$920.00			0		0	\$0.00	\$0.00
Oiler		1	10	\$46.00	\$460.00			0		0	\$0.00	\$0.00
Laborer		3	10	\$37.00	\$1,110.00			0		0	\$0.00	\$0.00
								0		0	\$0.00	\$0.00
								0		0	\$0.00	\$0.00
								0		0	\$0.00	\$0.00
								0		0	\$0.00	\$0.00
								0		0	\$0.00	\$0.00
								0		0	\$0.00	\$0.00
								0		0	\$0.00	\$0.00
17% OT					\$510.00			0		0	\$0.00	\$0.00
BARE UNIT COST \$140.40		TOTAL LABOR COST \$3,510.00				BARE UNIT COS \$0.00		0	TOTAL SES COST \$0.00			
MATERIAL / SERVICES		QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GAL.	TOTAL UNITS	TOTAL HOURS	HRLY RATE	TOTAL COST
Fuel / Oil / Grease		345	\$ 4.00	GAL	\$1,380.00	150 Ton Crane		120	1	10	\$111.00	\$1,110.00
Equipment Repairs 7%					\$135.10	Barge 200x50		0	1	10	\$107.00	\$1,070.00
PPE		7	\$15.00		\$116.20	Tender 200 HP		20	1	10	\$16.00	\$160.00
Oil Boom (FT)		250	\$2.00		\$500.00	Tug 800 HP		150	1	10	\$60.00	\$600.00
Debris Curtain (FT)		250	\$5.00		\$1,250.00	Debris Barge		0	1	10	\$54.00	\$540.00
					\$0.00	ICE Vibratory		15	1	10	\$22.00	\$220.00
					\$0.00	Air compressor		20	1	10	\$5.00	\$50.00
					\$0.00	Welder/ Torch		20	1	10	\$22.00	\$220.00
					\$0.00			0		0	\$0.00	\$0.00
					\$0.00			0		0	\$0.00	\$0.00
					\$0.00			0		0	\$0.00	\$0.00
					\$0.00			0		0	\$0.00	\$0.00
					\$0.00			0		0	\$0.00	\$0.00
					\$0.00			0		0	\$0.00	\$0.00
					\$0.00			0		0	\$0.00	\$0.00
TAX AT 8%					\$270.50	TAX AT 8%		0		0	\$0.00	\$317.60
BARE UNIT COST \$146.07		TOTAL MATERIAL COST \$3,651.80				BARE UNIT COS \$171.50		345	TOTAL RENTED EQUIP \$4,287.60			

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ESTIMATE WORKSHEET 3.3													
PILE REPLACEMENT													
BID DATE		PROJECT LOCATION					DESCRIPTION OF ITEM					ITEM NO.	
												3.3	
TOTAL QUANTITY ON PROPOSAL	15 EA					HOURS PER SHIFT	SHIFTS PER DAY	DAYS PER WEEK	DAILY UNIT PRODUCTION RATE			DAYS REQ. TO COMPLETE	
QUANTITY						10	1	6	15			1	
ESTIMATE WORKSHEET		TOTAL LABOR		TOTAL MATERIAL		TOTAL EQUIPMENT	TOTAL RENTED EQUIPMENT		TOTAL SUB-CONTRACTOR			TOTAL	
		\$5,545.80		\$68,863.18			\$5,227.20		\$0.00			\$79,636.18	
GRAND TOTALS		\$5,545.80		\$68,863.18		\$0.00	\$5,227.20		\$0.00			\$79,636.18	
UNIT PRICES		\$369.72		\$4,590.88		\$0.00	\$348.48		\$0.00				
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST		TOTAL COST					UNIT PRICE		\$5,309.08	
					\$0.00					UNIT OF MEASURE		EA	
					\$0.00					OH&P 25%		\$6,636	
					\$0.00								
					\$0.00								
					\$0.00								
					\$0.00								
BARE UNIT COST \$0.00		TOTAL COST \$0.00											
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	OWN EQUIPMENT	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	HRLY RATE	TOTAL COST	
Crane Operator		1	10	\$51.00	\$510.00			0		0	\$0.00	\$0.00	
Operator		3	10	\$46.00	\$1,380.00			0		0	\$0.00	\$0.00	
Oiler		2	10	\$50.00	\$1,000.00			0		0	\$0.00	\$0.00	
Laborer		5	10	\$37.00	\$1,850.00			0		0	\$0.00	\$0.00	
								0		0	\$0.00	\$0.00	
								0		0	\$0.00	\$0.00	
								0		0	\$0.00	\$0.00	
								0		0	\$0.00	\$0.00	
								0		0	\$0.00	\$0.00	
								0		0	\$0.00	\$0.00	
								0		0	\$0.00	\$0.00	
17% OT					\$805.80			0		0	\$0.00	\$0.00	
BARE UNIT COST \$369.72		TOTAL LABOR COST \$5,545.80				BARE UNIT COS \$0.00		0		TOTAL SES COST		\$0.00	
MATERIAL / SERVICES		QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	HRLY RATE	TOTAL COST	
Fuel / Oil / Grease		425	\$ 4.00	GAL	\$1,700.00	150 Ton Crane		120	1	10	\$111.00	\$1,110.00	
Equipment Repairs 7%					\$196.00	Barge 200x50		0	1	10	\$107.00	\$1,070.00	
PPE		11	\$15.00		\$116.20	Tender 200 HP		20	1	10	\$16.00	\$160.00	
Oil Boom		250	\$2.00		\$500.00	Tug 800 HP		150	1	10	\$60.00	\$600.00	
Debris Curtain		250	\$5.00		\$1,250.00	Debris Barge		0	1	10	\$54.00	\$540.00	
12" Dia. Replacement Pile		15	\$4,000.00		\$60,000.00	ICE Vibratory		15	1	10	\$22.00	\$220.00	
					\$0.00	Air compressor		20	1	10	\$5.00	\$50.00	
					\$0.00	Welder/ Torch		20	1	10	\$22.00	\$220.00	
					\$0.00	100 Ton Crane		80	1	10	\$87.00	\$870.00	
					\$0.00			0		0	\$0.00	\$0.00	
					\$0.00			0		0	\$0.00	\$0.00	
					\$0.00			0		0	\$0.00	\$0.00	
					\$0.00			0		0	\$0.00	\$0.00	
					\$0.00			0		0	\$0.00	\$0.00	
					\$0.00			0		0	\$0.00	\$0.00	
TAX AT 8%					\$5,100.98	TAX AT 8%		0		0	\$0.00	\$387.20	
BARE UNIT COST \$4,590.88													

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Table 5. Temporary Dock Relocation

ESTIMATE WORKSHEET 3.4													
BID DATE		PROJECT LOCATION					DESCRIPTION OF ITEM					ITEM NO.	
												3.4	
TOTAL QUANTITY ON PROPOSAL	1 Dock					HOURS PER SHIFT	SHIFTS PER DAY	DAYS PER WEEK	DAILY UNIT PRODUCTION RATE		DAYS REQ. TO COMPLETE		
						10	1	6	1		1		
ESTIMATE WORKSHEET		TOTAL LABOR		TOTAL MATERIAL		TOTAL EQUIPMENT	TOTAL RENTED EQUIPMENT		TOTAL SUB-CONTRACTOR		TOTAL		
		\$4,914.00		\$3,793.50			\$4,460.40		\$58,170.55		\$71,338.45		
GRAND TOTALS		\$4,914.00		\$3,793.50		\$0.00	\$4,460.40		\$58,170.55		\$71,338.45		
UNIT PRICES		\$4,914.00		\$3,793.50		\$0.00	\$4,460.40		\$58,170.55				
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST		TOTAL COST				UNIT PRICE		\$71,338.45		
									UNIT OF MEASURE		Dock		
		10 Pile Replacement	10	\$5,309.08	\$53,090.78				OH&P 25%				
		10 Pile Removal	10	\$507.98	\$5,079.76								
					\$0.00								
				\$0.00									
					\$0.00								
					\$0.00								
BARE UNIT COST	\$58,170.55	TOTAL COST				\$58,170.55							
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	OWN EQUIPMENT	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	HRLY RATE	TOTAL COST	
Crane Operator		1	10	\$51.00	\$510.00			0		0	\$0.00	\$0.00	
Operator		3	10	\$46.00	\$1,380.00			0		0	\$0.00	\$0.00	
Oiler		1	10	\$46.00	\$460.00			0		0	\$0.00	\$0.00	
Laborer		5	10	\$37.00	\$1,850.00			0		0	\$0.00	\$0.00	
								0		0	\$0.00	\$0.00	
								0		0	\$0.00	\$0.00	
								0		0	\$0.00	\$0.00	
								0		0	\$0.00	\$0.00	
								0		0	\$0.00	\$0.00	
								0		0	\$0.00	\$0.00	
								0		0	\$0.00	\$0.00	
17% OT					\$714.00			0		0	\$0.00	\$0.00	
BARE UNIT COST	\$4,914.00	TOTAL LABOR COST				\$4,914.00	BARE UNIT COS \$0.00		0	TOTAL SES COST \$0.00			
MATERIAL / SERVICES		QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	HRLY RATE	TOTAL COST	
Fuel / Oil / Grease		375	\$ 4.00	GAL	\$1,500.00	150 Ton Crane		120	1	10	\$111.00	\$1,110.00	
Equipment Repairs 7%					\$146.30	Barge 200x50		0	1	10	\$107.00	\$1,070.00	
PPE		10	\$15.00		\$116.20	Tender 200 HP		20	1	10	\$16.00	\$160.00	
Oil Boom		250	\$2.00		\$500.00	Tug 800 HP		150	1	10	\$60.00	\$600.00	
Debris Curtain		250	\$5.00		\$1,250.00	Pile Barge		0	1	10	\$54.00	\$540.00	
					\$0.00	ICE Vibratory		15	1	10	\$22.00	\$220.00	
					\$0.00	Air compressor		20	1	10	\$5.00	\$50.00	
					\$0.00	Welder/ Torch		20	1	10	\$22.00	\$220.00	
					\$0.00	Forklift		30	1	10	\$16.00	\$160.00	
					\$0.00			0		0	\$0.00	\$0.00	
					\$0.00			0		0	\$0.00	\$0.00	
					\$0.00			0		0	\$0.00	\$0.00	
					\$0.00			0		0	\$0.00	\$0.00	
					\$0.00			0		0	\$0.00	\$0.00	
					\$0.00			0		0	\$0.00	\$0.00	
TAX AT 8%					\$281.00	TAX AT 8%		0		0	\$0.00	\$330.40	
BARE UNIT COST	\$3,793.50	TOTAL MATERIAL COST				\$3,793.50	BARE UNIT COS	\$4,460.40	375	TOTAL RENTED EQUIP \$4,460.40			

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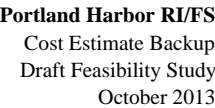


Table 6. Temporary Sheetpile Walls

ESTIMATE WORKSHEET 5.2													
Temp. Sheet Pile Walls													
BID DATE		PROJECT LOCATION					DESCRIPTION OF ITEM					ITEM NO.	
												5.2	
						PRODUCTION DATA							
TOTAL QUANTITY ON PROPOSAL		14 LF	3 pairs per day			HOURS PER SHIFT	SHIFTS PER DAY	DAYS PER WEEK	DAILY UNIT PRODUCTION RATE		DAYS REQ. TO COMPLETE		
QUANTITY			Assume sheets 80'			10	1	6	14		1		
ESTIMATE WORKSHEET			TOTAL LABOR		TOTAL MATERIAL	TOTAL EQUIPMENT	TOTAL RENTED EQUIPMENT		TOTAL SUB-CONTRACTOR		TOTAL		
WORKSHEET 5.2			\$4,800.00		\$1,756.51		\$5,130.00		\$14,675.28		\$26,362		
											\$0		
											\$0		
											\$0		
GRAND TOTALS			\$4,800.00		\$1,756.51	\$0.00	\$5,130.00		\$14,675.28		\$26,362		
UNIT PRICES			\$355.56		\$130.11	\$0.00	\$380.00		\$1,087.06				
SUB-CONTRACTOR		WORK TO PERFORM	QUANTITY UNITS	UNIT COST		TOTAL COST			UNIT PRICE		\$1,953		
									UNIT OF MEASURE		LF		
Purchase and deliver steel sheets			14	\$1,082		\$14,601			OH&P 25%		\$2,440		
Remove sheet pile wall			14	\$433		\$5,843							
Salvage Cost			14	-\$427		-\$5,769							
						\$0							
						\$0							
						\$0							
BARE UNIT COST		\$1,087.06	TOTAL COST		\$14,675.28								
LABOR CLASSIFICATION		WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	OWN EQUIPMENT	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	HRLY RATE	TOTAL COST
Laborer			8	10	\$37.00	\$2,960.00			0		0	\$0.00	\$0.00
Operator			4	10	\$46.00	\$1,840.00			0		0	\$0.00	\$0.00
				0	\$0.00	\$0.00			0		0	\$0.00	\$0.00
				0	\$0.00	\$0.00			0		0	\$0.00	\$0.00
				0	\$0.00	\$0.00			0		0	\$0.00	\$0.00
				0	\$0.00	\$0.00			0		0	\$0.00	\$0.00
				0	\$0.00	\$0.00			0		0	\$0.00	\$0.00
				0	\$0.00	\$0.00			0		0	\$0.00	\$0.00
				0	\$0.00	\$0.00			0		0	\$0.00	\$0.00
				0	\$0.00	\$0.00			0		0	\$0.00	\$0.00
				0	\$0.00	\$0.00			0		0	\$0.00	\$0.00
17% OT				0		\$0.00			0		0	\$0.00	\$0.00
BARE UNIT COST		\$0.00	TOTAL LABOR COST		\$4,800.00	BARE UNIT COS		\$0.00	0	TOTAL SES COST		\$0.00	
MATERIAL / SERVICES		QUANTITY UNITS	UNIT COST		TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	HRLY RATE	TOTAL COST	
Fuel / Oil / Grease		345	\$ 4.00	GAL	\$1,380.00	150 Ton Crane		120	1	10	\$111.00	\$1,110.00	
Equipment Repairs 7%					\$152.60	Barge 200x50		0	1	10	\$107.00	\$1,070.00	
PPE		12	\$15.00		\$93.80	Tender 200 HP		20	1	10	\$16.00	\$160.00	
					\$0.00	Tug 800 HP		150	1	10	\$60.00	\$600.00	
					\$0.00	ICE Vibratory		15	1	10	\$22.00	\$220.00	
					\$0.00	Air compressor		20	1	10	\$47.00	\$470.00	
					\$0.00	Welder/ Torch		20	1	10	\$5.00	\$50.00	
					\$0.00	Material Barge		0	1	10	\$107.00	\$1,070.00	
					\$0.00			0		0	\$0.00	\$0.00	
					\$0.00			0		0	\$0.00	\$0.00	
					\$0.00			0		0	\$0.00	\$0.00	
					\$0.00			0		0	\$0.00	\$0.00	
					\$0.00			0		0	\$0.00	\$0.00	
					\$0.00			0		0	\$0.00	\$0.00	
					\$0.00			0		0	\$0.00	\$0.00	
TAX AT 8%					\$130.11	TAX AT 8%		0		0	\$0.00	\$380.00	
BARE UNIT COST		\$130.11	TOTAL MATERIAL COST		\$1,756.51	BARE UNIT COS		\$380.00	345	TOTAL RENTED EQUIP		\$5,130.00	

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ESTIMATE WORKSHEET 5.1													
BID DATE		PROJECT LOCATION					DESCRIPTION OF ITEM					ITEM NO.	
												5.1	
						PRODUCTION DATA							
TOTAL QUANTITY ON PROPOSAL		750 LF					HOURS PER SHIFT	SHIFTS PER DAY	DAYS PER WEEK	DAILY UNIT PRODUCTION RATE		DAYS REQ. TO COMPLETE	
QUANTITY						10	1	6	750		1		
ESTIMATE WORKSHEET		TOTAL LABOR		TOTAL MATERIAL		TOTAL EQUIPMENT	TOTAL RENTED EQUIPMENT		TOTAL SUB-CONTRACTOR		TOTAL		
WORKSHEET 5.1		\$2,808.00		\$44,788.90			\$1,252.80		\$2,800.00		\$51,649.70		
											\$0.00		
											\$0.00		
											\$0.00		
GRAND TOTALS		\$2,808.00		\$44,788.90		\$0.00	\$1,252.80		\$2,800.00		\$51,649.70		
UNIT PRICES		\$3.74		\$59.72		\$0.00	\$1.67		\$3.73				
SUB-CONTRACTOR		WORK TO PERFORM	QUANTITY UNITS	UNIT COST		TOTAL COST					UNIT PRICE \$68.87		
IWT Delivery			1	\$2,800.00		\$2,800.00					UNIT OF MEASURE LF		
											OH&P 25% \$86		
BARE UNIT COST		\$0.00	TOTAL COST		\$2,800.00								
LABOR CLASSIFICATION		WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	OWN EQUIPMENT	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	HRLY RATE	TOTAL COST
Laborer			4	10	\$37.00	\$1,480.00			0		0	\$0.00	\$0.00
Operator			2	10	\$46.00	\$920.00			0		0	\$0.00	\$0.00
				0	\$0.00	\$0.00			0		0	\$0.00	\$0.00
				0	\$0.00	\$0.00			0		0	\$0.00	\$0.00
				0	\$0.00	\$0.00			0		0	\$0.00	\$0.00
				0	\$0.00	\$0.00			0		0	\$0.00	\$0.00
				0	\$0.00	\$0.00			0		0	\$0.00	\$0.00
				0	\$0.00	\$0.00			0		0	\$0.00	\$0.00
				0	\$0.00	\$0.00			0		0	\$0.00	\$0.00
				0	\$0.00	\$0.00			0		0	\$0.00	\$0.00
				0	\$0.00	\$0.00			0		0	\$0.00	\$0.00
17% OT				0		\$408.00			0		0	\$0.00	\$0.00
BARE UNIT COST		\$0.00	TOTAL LABOR COST		\$2,808.00		BARE UNIT COS \$0.00		0	TOTAL SES COST		\$0.00	
MATERIAL / SERVICES		QUANTITY UNITS	UNIT COST		TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	HRLY RATE	TOTAL COST	
FOG GAL		45	\$4.00		\$180.00	Work Boat		15	2	10	\$56.00	\$1,120.00	
Equipment Repair 7%		1	\$81.20		\$81.20	Forklift		30	1	2.5	\$16.00	\$40.00	
PPE		6	\$15.00		\$90.00			0		0	\$0.00	\$0.00	
Turbidity Curtains		800	\$51.40		\$41,120.00			0		0	\$0.00	\$0.00	
					\$0.00			0		0	\$0.00	\$0.00	
					\$0.00			0		0	\$0.00	\$0.00	

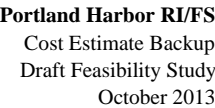
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Table 8. Open Water Dredging and Transport

ESTIMATE WORKSHEET 4.1														
OPEN WATER DREDGING AND TRANSPORT														
BID DATE		PROJECT LOCATION					DESCRIPTION OF ITEM					ITEM NO.		
												4.1		
						PRODUCTION DATA								
TOTAL QUANTITY ON PROPOSAL	700 CY					HOURS PER SHIFT	SHIFTS PER DAY	DAYS PER WEEK	DAILY UNIT PRODUCTION RATE			DAYS REQ. TO COMPLETE		
QUANTITY						10	1	6	700			1		
ESTIMATE WORKSHEET		TOTAL LABOR		TOTAL MATERIAL		TOTAL EQUIPMENT	TOTAL RENTED EQUIPMENT		TOTAL SUB-CONTRACTOR			TOTAL		
WORKSHEET 4.1		\$2,047.50		\$1,425.82		\$0.00	\$11,944.80		\$3,500.00			\$18,918.12		
												\$0.00		
												\$0.00		
												\$0.00		
GRAND TOTALS		\$2,047.50		\$1,425.82		\$0.00	\$11,944.80		\$3,500.00			\$18,918.12		
UNIT PRICES		\$2.93		\$2.04		\$0.00	\$17.06		\$5.00					
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST		TOTAL COST					UNIT PRICE		\$27.03		
SURVEY/CREW/BOAT			\$12,000.00	WK	\$2,000					UNIT OF MEASURE		CY		
SCOW HAUL TO OFFLOAD FACILITY			\$1,500.00	TRIP	\$1,500					OH&P 25%		\$33.8		
BARE UNIT COST		\$0.00	TOTAL COST											
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	OWN EQUIPMENT	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	HRLY RATE	TOTAL COST		
Crane Operator		1	10	\$51.00	\$510			0		0	\$0.00	\$0.00		
Oiler		1	10	\$50.00	\$500			0		0	\$0.00	\$0.00		
Work Boat Laborer		1	10	\$37.00	\$370			0		0	\$0.00	\$0.00		
Laborer		4	10	\$37.00	\$370			0		0	\$0.00	\$0.00		
					\$0			0		0	\$0.00	\$0.00		
					\$0			0		0	\$0.00	\$0.00		
					\$0			0		0	\$0.00	\$0.00		
					\$0			0		0	\$0.00	\$0.00		
					\$0			0		0	\$0.00	\$0.00		
					\$0			0		0	\$0.00	\$0.00		
					\$0			0		0	\$0.00	\$0.00		
17% OT					\$298			0		0	\$0.00	\$0.00		
BARE UNIT COST		\$4.73	TOTAL LABOR COST			\$2,048	BARE UNIT COS \$0.00		0	TOTAL SES COST				\$0.00
MATERIAL / SERVICES		QUANTITY UNITS	UNIT COST		TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	HRLY RATE	TOTAL COST		
FOG	GAL	140	\$4.00		\$560.00	Derrick Rig		125	1	10	\$776.00	\$7,760.00		
Equipment Repair	7%	1	\$655.20		\$655.20	Material Scow		0	2	20	\$85.00	\$1,700.00		
PPE		7	\$15.00		\$105.00	Work Boat		15	2	20	\$56.00	\$1,120.00		
					\$0.00	Clam Bucket		0	1	10	\$48.00	\$480.00		
					\$0.00			0		0	\$0.00	\$0.00		
					\$0.00			0		0	\$0.00	\$0.00		
					\$0.00			0		0	\$0.00	\$0.00		
					\$0.00			0		0	\$0.00	\$0.00		
					\$0.00			0		0	\$0.00	\$0.00		
					\$0.00			0		0	\$0.00	\$0.00		
					\$0.00			0		0	\$0.00	\$0.00		
					\$0.00			0		0	\$0.00	\$0.00		
					\$0.00			0		0	\$0.00	\$0.00		
					\$0.00			0		0	\$0.00	\$0.00		
					\$0.00			0		0	\$0.00	\$0.00		
					\$0.00			0		0	\$0.00	\$0.00		
TAX AT 8%					\$105.62	TAX AT 8%		0		0	\$0.00	\$884.80		
BARE UNIT COST		\$2.04	TOTAL MATERIAL COST			\$1,425.82	BARE UNIT COS		\$17.06	140	TOTAL RENTED EQUIP			\$11,944.80

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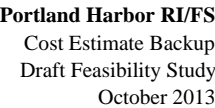


ESTIMATE WORKSHEET 4.3													
CONFINED AREA DREDGING & TRANSPORT													
BID DATE		PROJECT LOCATION					DESCRIPTION OF ITEM					ITEM NO.	
												4.3	
				PRODUCTION DATA									
TOTAL QUANTITY ON PROPOSAL	300 CY			HOURS PER SHIFT	SHIFTS PER DAY	DAYS PER WEEK	DAILY UNIT PRODUCTION RATE			DAYS REQ. TO COMPLETE			
QUANTITY				10	1	6	300			1			
ESTIMATE WORKSHEET WORKSHEET 4.3		TOTAL LABOR	TOTAL MATERIAL	TOTAL EQUIPMENT	TOTAL RENTED EQUIPMENT	TOTAL SUB-CONTRACTOR	TOTAL						
		\$2,082.60	\$546.26	\$0.00	\$6,328.80	\$2,500.00	\$11,457.66						
							\$0.00						
							\$0.00						
GRAND TOTALS		\$2,082.60	\$546.26	\$0.00	\$6,328.80	\$2,500.00	\$11,457.66						
UNIT PRICES		\$6.94	\$1.82	\$0.00	\$21.10	\$8.33							
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST		TOTAL COST				UNIT PRICE			\$38.19	
SURVEY/CREW/BOAT			\$12,000.00	WK	\$2,000				UNIT OF MEASURE			CY	
SCOW HAUL TO OFFLOAD FACILITY			\$1,500.00	TRIP	\$500				OH&P 25%			\$47.7	
					\$0.00								
					\$0.00								
					\$0.00								
					\$0.00								
BARE UNIT COST		\$8.33	TOTAL COST			\$2,500.00							
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	OWN EQUIPMENT	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	HRLY RATE	TOTAL COST	
Dredge Operator	Dredge	1	10	\$54.00	\$540.00			0	0	10	\$45.00	\$0.00	
Deck Hand	Deck Hand	2	20	\$37.00	\$740.00			0	0	10	\$100.00	\$0.00	
Boat Operator	Wrk Boat	1	10	\$50.00	\$500.00			0	0	10	\$10.00	\$0.00	
			0	\$0.00	\$0.00			0		0	\$0.00	\$0.00	
			0	\$0.00	\$0.00			0		0	\$0.00	\$0.00	
			0	\$0.00	\$0.00			0		0	\$0.00	\$0.00	
			0	\$0.00	\$0.00			0		0	\$0.00	\$0.00	
			0	\$0.00	\$0.00			0		0	\$0.00	\$0.00	
			0	\$0.00	\$0.00			0		0	\$0.00	\$0.00	
			0	\$0.00	\$0.00			0		0	\$0.00	\$0.00	
			0	\$0.00	\$0.00			0		0	\$0.00	\$0.00	
17% OT			0		\$302.60			0		0	\$0.00	\$0.00	
BARE UNIT COST		\$6.94	TOTAL LABOR COST			BARE UNIT COS		\$0.00	0	TOTAL SES COST			\$0.00
MATERIAL / SERVICES		QUANTITY UNITS	UNIT COST		TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	HRLY RATE	TOTAL COST	
FOG	GAL	95	\$4.00		\$380.00	PC 600 Long Front	Load	60	1	10	\$82.00	\$820.00	
PPE		4	\$15.00		\$60.00	Push Boat	Move	20	1	10	\$40.00	\$400.00	
Equipment Repairs	7%	1	\$65.80		\$65.80	Work Boat		15	1	10	\$56.00	\$560.00	
					\$0.00	Barge (10'*40')		0	4	40	\$31.00	\$1,240.00	
					\$0.00	Scows		0	4	40	\$68.00	\$2,720.00	
					\$0.00	Spuds		0	4	40	\$2.00	\$80.00	
					\$0.00	Spud wells		0	4	40	\$1.00	\$40.00	
					\$0.00			0		0	\$0.00	\$0.00	
					\$0.00			0		0	\$0.00	\$0.00	
					\$0.00			0		0	\$0.00	\$0.00	
					\$0.00			0		0	\$0.00	\$0.00	
					\$0.00			0		0	\$0.00	\$0.00	
					\$0.00			0		0	\$0.00	\$0.00	
					\$0.00			0		0	\$0.00	\$0.00	
TAX at 8%					\$40.46	TAX at 8%		0		0	\$0.00	\$468.80	
BARE UNIT COST		\$1.82	TOTAL MATERIAL COST			BARE UNIT COS		\$21.10	95	TOTAL RENTED EQUIP			\$6,328.80

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Table 10. Dredging from Shore and Transport

ESTIMATE WORKSHEET 4.2														
DREDGING FROM SHORE & TRANSPORT														
BID DATE		PROJECT LOCATION						DESCRIPTION OF ITEM				ITEM NO.		
												4.2		
								PRODUCTION DATA						
TOTAL QUANTITY ON PROPOSAL		300 CY					HOURS PER SHIFT	SHIFTS PER Day	DAYS PER WEEK	DAILY UNIT PRODUCTION RATE		DAYS REQ. TO COMPLETE		
QUANTITY							10	1	6	300		1		
ESTIMATE WORKSHEET			TOTAL LABOR		TOTAL MATERIAL		TOTAL EQUIPMENT	TOTAL RENTED EQUIPMENT		TOTAL SUB-CONTRACTOR		TOTAL		
WORKSHEET 4.2			\$3,568.50		\$3,501.36		\$0.00	\$2,916.00		\$0.00		\$9,985.86		
												\$0.00		
												\$0.00		
GRAND TOTALS			\$3,568.50		\$3,501.36		\$0.00	\$2,916.00		\$0.00		\$9,985.86		
UNIT PRICES			\$11.90		\$11.67		\$0.00	\$9.72		\$0.00				
SUB-CONTRACTOR		WORK TO PERFORM	QUANTITY UNITS	UNIT COST		TOTAL COST					UNIT PRICE		\$33.29	
					\$0.00	UNIT OF MEASURE					CY			
					\$0.00	OH&P					25%	\$41.6		
					\$0.00									
					\$0.00									
					\$0.00									
BARE UNIT COST		\$0.00	TOTAL COST					\$0.00						
LABOR CLASSIFICATION		WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	OWN EQUIPMENT	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	HRLY RATE	TOTAL COST	
Operator			1	10	\$46.00	\$460.00			0		0	\$0.00	\$0.00	
Laborer			3	10	\$37.00	\$1,110.00			0		0	\$0.00	\$0.00	
Teamster			4	10	\$37.00	\$1,480.00			0		0	\$0.00	\$0.00	
				0	\$0.00	\$0.00			0		0	\$0.00	\$0.00	
				0	\$0.00	\$0.00			0		0	\$0.00	\$0.00	
				0	\$0.00	\$0.00			0		0	\$0.00	\$0.00	
				0	\$0.00	\$0.00			0		0	\$0.00	\$0.00	
				0	\$0.00	\$0.00			0		0	\$0.00	\$0.00	
				0	\$0.00	\$0.00			0		0	\$0.00	\$0.00	
				0	\$0.00	\$0.00			0		0	\$0.00	\$0.00	
17% OT				0		\$518.50			0		0	\$0.00	\$0.00	
BARE UNIT COST		\$11.90	TOTAL LABOR COST			\$3,568.50	BARE UNIT COS		\$0.00	0	TOTAL SES COST			\$0.00
MATERIAL / SERVICES			QUANTITY UNITS	UNIT COST		TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	HRLY RATE	TOTAL COST	
FOG		GAL	90	\$4.00		\$360.00	PC 600 Long Front	Dredge	60	1	10	\$82.00	\$820.00	
EQUIPMENT REPAIRS		7%	1	\$147.00		\$147.00	Dump Truck	Trans	30	4	40	\$32.00	\$1,280.00	
PPE			8	\$15.00		\$120.00	Hydraulic Clam Bucket	Dredge	0	1	10	\$60.00	\$600.00	
Poly			1	\$500.00		\$500.00			0		0	\$0.00	\$0.00	
Diamataceous earth			23	\$94.00		\$2,115.00			0		0	\$0.00	\$0.00	
						\$0.00			0		0	\$0.00	\$0.00	
						\$0.00			0		0	\$0.00	\$0.00	
						\$0.00			0		0	\$0.00	\$0.00	
						\$0.00			0		0	\$0.00	\$0.00	
						\$0.00			0		0	\$0.00	\$0.00	
						\$0.00			0		0	\$0.00	\$0.00	
						\$0.00			0		0	\$0.00	\$0.00	
						\$0.00			0		0	\$0.00	\$0.00	
						\$0.00			0		0	\$0.00	\$0.00	
						\$0.00			0		0	\$0.00	\$0.00	
						\$0.00			0		0	\$0.00	\$0.00	
						\$0.00			0		0	\$0.00	\$0.00	
						\$0.00			0		0	\$0.00	\$0.00	
TAX AT 8%						\$259.36	TAX AT 8%			0		\$0.00	\$216.00	
BARE UNIT COST		\$11.67	TOTAL MATERIAL COST			\$3,501.36	BARE UNIT COS		\$9.72	90	TOTAL RENTED EQUIP			\$2,916.00



ESTIMATE WORKSHEET 4.4

Residual Dredging													
BID DATE		PROJECT LOCATION					DESCRIPTION OF ITEM					ITEM NO.	
												4.4	
						PRODUCTION DATA							
TOTAL QUANTITY ON PROPOSAL		250 CY					HOURS PER SHIFT	SHIFTS PER DAY	DAYS PER WEEK	DAILY UNIT PRODUCTION RATE		DAYS REQ. TO COMPLETE	
QUANTITY							10	1	6	250		1	
ESTIMATE WORKSHEET			TOTAL LABOR		TOTAL MATERIAL		TOTAL EQUIPMENT	TOTAL RENTED EQUIPMENT		TOTAL SUB-CONTRACTOR		TOTAL	
WORKSHEET 4.4			\$2,047.50		\$1,425.82		\$0.00	\$11,944.80		\$500.00		\$15,918.12	
												\$0.00	
												\$0.00	
												\$0.00	
GRAND TOTALS			\$2,047.50		\$1,425.82		\$0.00	\$11,944.80		\$500.00		\$15,918.12	
UNIT PRICES			\$8.19		\$5.70		\$0.00	\$47.78		\$2.00			
SUB-CONTRACTOR		WORK TO PERFORM	QUANTITY UNITS	UNIT COST		TOTAL COST			UNIT PRICE		\$63.67		
									UNIT OF MEASURE		CY		
SCOW HAUL TO OFFLOAD FACILITY			\$1,500.00	TRIP	\$500	OH&P			25%	\$79.6			
BARE UNIT COST		\$0.00	TOTAL COST			\$500							
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	OWN EQUIPMENT	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	HRLY RATE	TOTAL COST	
Crane Operator		1	10	\$51.00	\$510			0		0	\$0.00	\$0.00	
Oiler		1	10	\$50.00	\$500			0		0	\$0.00	\$0.00	
Work Boat Laborer		1	10	\$37.00	\$370			0		0	\$0.00	\$0.00	
Laborer		4	10	\$37.00	\$370			0		0	\$0.00	\$0.00	
					\$0			0		0	\$0.00	\$0.00	
					\$0			0		0	\$0.00	\$0.00	
					\$0			0		0	\$0.00	\$0.00	
					\$0			0		0	\$0.00	\$0.00	
					\$0			0		0	\$0.00	\$0.00	
					\$0			0		0	\$0.00	\$0.00	
					\$0			0		0	\$0.00	\$0.00	
17% OT					\$298			0		0	\$0.00	\$0.00	
BARE UNIT COST		\$4.73	TOTAL LABOR COST			\$2,048	BARE UNIT COS		\$0.00	0	TOTAL SES COST		\$0.00
MATERIAL / SERVICES			QUANTITY UNITS	UNIT COST		TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	HRLY RATE	TOTAL COST
FOG	GAL	140	\$4.00		\$560.00		Derrick Rig		125	1	10	\$776.00	\$7,760.00
Equipment Repair	7%	1	\$655.20		\$655.20		Material Scow		0	2	20	\$85.00	\$1,700.00
PPE		7	\$15.00		\$105.00		Work Boat		15	2	20	\$56.00	\$1,120.00
					\$0.00		Clam Bucket		0	1	10	\$48.00	\$480.00
					\$0.00				0		0	\$0.00	\$0.00
					\$0.00				0		0	\$0.00	\$0.00
					\$0.00				0		0	\$0.00	\$0.00
					\$0.00				0		0	\$0.00	\$0.00
					\$0.00				0		0	\$0.00	\$0.00
					\$0.00				0		0	\$0.00	\$0.00
					\$0.00				0		0	\$0.00	\$0.00
					\$0.00				0		0	\$0.00	\$0.00
					\$0.00				0		0	\$0.00	\$0.00
TAX AT 8%					\$105.62		TAX AT 8%		0		0	\$0.00	\$884.80
BARE UNIT COST		\$5.70	TOTAL MATERIAL COST			\$1,425.82	BARE UNIT COS		\$47.78	140	TOTAL RENTED EQUIP		\$11,944.80

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Table 12. Stabilization

ESTIMATE WORKSHEET 6.3												
STABILIZATION												
BID DATE		PROJECT LOCATION					DESCRIPTION OF ITEM				ITEM NO.	
											6.3	
						PRODUCTION DATA						
TOTAL QUANTITY ON PROPOSAL	700 CY					HOURS PER SHIFT	SHIFTS PER DAY	DAYS PER WEEK	DAILY UNIT PRODUCTION RATE		DAYS REQ. TO COMPLETE	
QUANTITY						10	1	6	700		1	
ESTIMATE WORKSHEET		TOTAL LABOR		TOTAL MATERIAL		TOTAL EQUIPMENT	TOTAL RENTED EQUIPMENT		TOTAL SUB-CONTRACTOR		TOTAL	
WORKSHEET 6.3		\$4,715.10		\$5,745.60		\$0.00	\$7,084.80		\$0.00		\$17,545.50	
											\$0.00	
											\$0.00	
											\$0.00	
GRAND TOTALS		\$4,715.10		\$5,745.60		\$0.00	\$7,084.80		\$0.00		\$17,545.50	
UNIT PRICES		\$6.74		\$8.21		\$0.00	\$10.12		\$0.00			
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST		TOTAL COST				UNIT PRICE		\$25.07	
									UNIT OF MEASURE		CY	
									OH&P	25%	\$31.3	
					\$0.00							
					\$0.00							
					\$0.00							
					\$0.00							
					\$0.00							
					\$0.00							
BARE UNIT COST		\$0.00		TOTAL COST		\$0.00						
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	OWN EQUIPMENT	WORK TO PERFORM	FUEL GAL.	TOTAL UNITS	TOTAL HOURS	HRLY RATE	TOTAL COST
Foreman		1	10	\$54.00	\$540.00			0		0	\$0.00	\$0.00
Crane Operator	Crane	1	10	\$51.00	\$510.00			0		0	\$0.00	\$0.00
Operator	PC 300	1	10	\$46.00	\$460.00			0		0	\$0.00	\$0.00
Oiler		1	10	\$50.00	\$500.00			0		0	\$0.00	\$0.00
Tug Captain		1	10	\$54.00	\$540.00			0		0	\$0.00	\$0.00
Deck Hand		1	10	\$37.00	\$370.00			0		0	\$0.00	\$0.00
Work Boat		1	10	\$37.00	\$370.00			0		0	\$0.00	\$0.00
Laborer		2	10	\$37.00	\$740.00			0		0	\$0.00	\$0.00
			0	\$0.00	\$0.00			0		0	\$0.00	\$0.00
			0	\$0.00	\$0.00			0		0	\$0.00	\$0.00
			0	\$0.00	\$0.00			0		0	\$0.00	\$0.00
17% OT			0		\$685.10			0		0	\$0.00	\$0.00
BARE UNIT COST		\$6.74		TOTAL LABOR COST		\$4,715.10		BARE UNIT COS \$0.00		0		TOTAL SES COST \$0.00
MATERIAL / SERVICES		QUANTITY UNITS	UNIT COST		TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GAL.	TOTAL UNITS	TOTAL HOURS	HRLY RATE	TOTAL COST
FOG	GAL	290	\$4.00		\$1,160.00	Crane w/Barge		125	1	10	\$225.00	\$2,250.00
Portland Cement		115	\$35		\$4,025.00	Material Barge		0	3	30	\$54.00	\$1,620.00
PPE		9	\$15.00		\$135.00	Transfer Barge		0	1	10	\$54.00	\$540.00
					\$0.00	Lash Barges		0	1	10	\$143.00	\$1,430.00
					\$0.00	Tug Boat 200 HP		150	1	10	\$16.00	\$160.00
					\$0.00	Work Boat		15	1	10	\$56.00	\$560.00
					\$0.00			0		0	\$0.00	\$0.00
					\$0.00			0		0	\$0.00	\$0.00
					\$0.00			0		0	\$0.00	\$0.00
					\$0.00			0		0	\$0.00	\$0.00
					\$0.00			0		0	\$0.00	\$0.00
					\$0.00			0		0	\$0.00	\$0.00
					\$0.00			0		0	\$0.00	\$0.00
					\$0.00			0		0	\$0.00	\$0.00
					\$0.00			0		0	\$0.00	\$0.00
					\$0.00			0		0	\$0.00	\$0.00
					\$0.00			0		0	\$0.00	\$0.00
					\$0.00			0		0	\$0.00	\$0.00
					\$0.00			0		0	\$0.00	\$0.00
					\$0.00			0		0	\$0.00	\$0.00
					\$0.00			0		0	\$0.00	\$0.00
					\$0.00			0		0	\$0.00	\$0.00
					\$0.00			0		0	\$0.00	\$0.00
					\$0.00			0		0	\$0.00	\$0.00
					\$0.00			0		0	\$0.00	\$0.00
					\$0.00			0		0	\$0.00	\$0.00
					\$0.00			0		0	\$0.00	\$0.00
					\$0.00			0		0	\$0.00	\$0.00
					\$0.00			0		0	\$0.00	\$0.00
					\$0.00			0		0	\$0.00	\$0.00
					\$0.00			0		0	\$0.00	\$0.00
					\$0.00			0		0	\$0.00	\$0.00
					\$0.00			0		0	\$0.00	\$0.00
					\$0.00			0		0	\$0.00	\$0.00
					\$0.00			0		0	\$0.00	\$0.00
					\$0.00			0		0	\$0.00	\$0.00
					\$0.00			0		0	\$0.00	\$0.00
					\$0.00			0		0	\$0.00	\$0.00
					\$0.00			0		0	\$0.00	\$0.00
					\$0.00			0		0	\$0.00	\$0.00
					\$0.00			0		0	\$0.00	\$0.00
					\$0.00			0		0	\$0.00	\$0.00
					\$0.00			0		0	\$0.00	\$0.00
					\$0.00			0		0	\$0.00	\$0.00
					\$0.00			0		0	\$0.00	\$0.00
					\$0.00			0		0	\$0.00	\$0.00
					\$0.00			0		0	\$0.00	\$0.00
					\$0.00			0		0	\$0.00	\$0.00
					\$0.00			0		0	\$0.00	\$0.00
					\$0.00			0		0	\$0.00	\$0.00
					\$0.00			0		0	\$0.00	\$0.00
					\$0.00			0		0	\$0.00	\$0.00
					\$0.00			0		0	\$0.00	\$0.00
					\$0.00			0		0	\$0.00	\$0.00
					\$0.00			0		0	\$0.00	\$0.00
					\$0.00			0		0	\$0.00	\$0.00
					\$0.00			0		0	\$0.00	\$0.00
					\$0.00			0		0	\$0.00	\$0.00
					\$0.00			0		0	\$0.00	\$0.00
					\$0.00			0		0	\$0.00	\$0.00
					\$0.00			0		0	\$0.00	\$0.00
					\$0.00			0		0	\$0.00	\$0.00
					\$0.00			0				

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Table 13. Scow Transportation

ESTIMATE WORKSHEET 6.1																	
SCOW TRANSPORTATION																	
BID DATE		PROJECT LOCATION						DESCRIPTION OF ITEM				ITEM NO.					
												6.1					
								PRODUCTION DATA									
TOTAL QUANTITY ON PROPOSAL		40 MILE						HOURS PER SHIFT		SHIFTS PER DAY		DAYS PER WEEK		DAILY UNIT PRODUCTION RATE		DAYS REQ. TO COMPLETE	
QUANTITY								10		1		6		40		1	
ESTIMATE WORKSHEET				TOTAL LABOR		TOTAL MATERIAL		TOTAL EQUIPMENT		TOTAL RENTED EQUIPMENT		TOTAL SUB-CONTRACTOR		TOTAL			
WORKSHEET 6.1				\$2,400.00		\$850.18		\$0.00		\$777.60		\$0.00		\$4,027.78			
														\$0.00			
														\$0.00			
														\$0.00			
GRAND TOTALS				\$2,400.00		\$850.18		\$0.00		\$777.60		\$0.00		\$4,027.78			
UNIT PRICES				\$60.00		\$21.25		\$0.00		\$19.44		\$0.00					
SUB-CONTRACTOR		WORK TO PERFORM		QUANTITY UNITS		UNIT COST						UNIT PRICE		\$100.69			
												UNIT OF MEASURE		MILE			
												OH&P 25%		\$126			

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Table 14. Hydraulic Offloading

ESTIMATE WORKSHEET 6.5														
Hydraulic Offloading														
BID DATE		PROJECT LOCATION					DESCRIPTION OF ITEM					ITEM NO.		
												6.5		
						PRODUCTION DATA								
TOTAL QUANTITY ON PROPOSAL		1,500 CY					HOURS PER SHIFT	SHIFTS PER Day	DAYS PER WEEK	DAILY UNIT PRODUCTION RATE		DAYS REQ. TO COMPLETE		
QUANTITY							10	1	6	1,500		1		
ESTIMATE WORKSHEET			TOTAL LABOR		TOTAL MATERIAL		TOTAL EQUIPMENT	TOTAL RENTED EQUIPMENT		TOTAL SUB-CONTRACTOR		TOTAL		
WORKSHEET 6.5			\$2,421.90		\$954.40		\$0.00	\$3,358.80		\$0.00		\$6,735.10		
												\$0.00		
												\$0.00		
												\$0.00		
GRAND TOTALS			\$2,421.90		\$954.40		\$0.00	\$3,358.80		\$0.00		\$6,735.10		
UNIT PRICES			\$1.61		\$0.64		\$0.00	\$2.24		\$0.00				
SUB-CONTRACTOR		WORK TO PERFORM	QUANTITY UNITS	UNIT COST		TOTAL COST					UNIT PRICE		\$4.49	
					\$0.00	UNIT OF MEASURE					CY			
					\$0.00	OH&P 25%					\$5.6			
					\$0.00									
					\$0.00									
						\$0.00								
BARE UNIT COST		\$0.00	TOTAL COST				\$0.00							
LABOR CLASSIFICATION		WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	OWN EQUIPMENT	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	HRLY RATE	TOTAL COST	
Operator		Offload	1	10	\$46.00	\$460.00			0		0	\$0.00	\$0.00	
Laborer		Offload	3	10	\$37.00	\$1,110.00			0		0	\$0.00	\$0.00	
Oiler		Oiler	1	10	\$50.00	\$500.00			0		0	\$0.00	\$0.00	
				0	\$0.00	\$0.00			0		0	\$0.00	\$0.00	
				0	\$0.00	\$0.00			0		0	\$0.00	\$0.00	
				0	\$0.00	\$0.00			0		0	\$0.00	\$0.00	
				0	\$0.00	\$0.00			0		0	\$0.00	\$0.00	
				0	\$0.00	\$0.00			0		0	\$0.00	\$0.00	
				0	\$0.00	\$0.00			0		0	\$0.00	\$0.00	
				0	\$0.00	\$0.00			0		0	\$0.00	\$0.00	
				0	\$0.00	\$0.00			0		0	\$0.00	\$0.00	
17% OT				0		\$351.90			0		0	\$0.00	\$0.00	
BARE UNIT COST		\$1.61	TOTAL LABOR COST				BARE UNIT COS \$0.00		0	TOTAL SES COST \$0.00				
MATERIAL / SERVICES			QUANTITY UNITS	UNIT COST		TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	HRLY RATE	TOTAL COST	
FOG GAL			160	\$4.00		\$640.00	100 Ton Crane	Offload	80	1	10	\$87.00	\$870.00	
EQUIPMENT REPAIRS 7%			1	\$168.70		\$168.70	High Solids Pump		40	1	10	\$47.00	\$470.00	
PPE			5	\$15.00		\$75.00	Diffuser Barge		0	1	10	\$107.00	\$1,070.00	
						\$0.00	Push Boat	Move	20	1	10	\$40.00	\$400.00	
						\$0.00	Pipe Welder		20	1	10	\$30.00	\$300.00	
						\$0.00			0		0	\$0.00	\$0.00	
						\$0.00			0		0	\$0.00	\$0.00	
						\$0.00			0		0	\$0.00	\$0.00	
						\$0.00			0		0	\$0.00	\$0.00	
						\$0.00			0		0	\$0.00	\$0.00	
						\$0.00			0		0	\$0.00	\$0.00	
						\$0.00			0		0	\$0.00	\$0.00	
						\$0.00			0		0	\$0.00	\$0.00	
						\$0.00			0		0	\$0.00	\$0.00	
						\$0.00			0		0	\$0.00	\$0.00	
						\$0.00			0		0	\$0.00	\$0.00	
TAX AT 8%						\$70.70	TAX AT 8%		0		0	\$0.00	\$248.80	
BARE UNIT COST		\$0.64	TOTAL MATERIAL COST				BARE UNIT COS		\$2.24	160	TOTAL RENTED EQUIP			\$3,358.80



Table 15. Open Water Capping

ESTIMATE WORKSHEET 7.1													
OPEN WATER CAPPING													
BID DATE		PROJECT LOCATION					DESCRIPTION OF ITEM				ITEM NO.		
											7.1		
						PRODUCTION DATA							
TOTAL QUANTITY ON PROPOSAL		1,500 Ton					HOURS PER SHIFT	SHIFTS PER DAY	DAYS PER WEEK	DAILY UNIT PRODUCTION RATE		DAYS REQ. TO COMPLETE	
QUANTITY													
ESTIMATE WORKSHEET		TOTAL LABOR		TOTAL MATERIAL		TOTAL EQUIPMENT	TOTAL RENTED EQUIPMENT		TOTAL SUB-CONTRACTOR		TOTAL		
WORKSHEET 7.1		\$3,545.10		\$2,066.69		\$0.00	\$13,510.80		\$2,000.00		\$21,122.59		
											\$0.00		
											\$0.00		
											\$0.00		
GRAND TOTALS		\$3,545.10		\$2,066.69		\$0.00	\$13,510.80		\$2,000.00		\$21,122.59		
UNIT PRICES				\$2.36		\$1.38	\$0.00		\$9.01		\$1.33		
SUB-CONTRACTOR		WORK TO PERFORM	QUANTITY UNITS	UNIT COST		TOTAL COST	Base (1500 Ton / day) Armor (1700 Ton / day)		UNIT PRICE		\$14.08		
						UNIT OF MEASURE			Ton				
Survey/ Crew/ Boat					\$2,000.00	OH&P 25%			\$17.6				
					\$0.00	OH&P 25%			\$15.5				
					\$0.00								
						\$0.00							
						\$0.00							
						\$0.00							
BARE UNIT COST		\$0.00	TOTAL COST		\$2,000.00								
LABOR CLASSIFICATION		WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	OWN EQUIPMENT	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	HRLY RATE	TOTAL COST
Crane Operator			1	10	\$51.00	\$510.00			0		0	\$0.00	\$0.00
Deck Hand			4	40	\$37.00	\$1,480.00			0		0	\$0.00	\$0.00
Tug Captain			1	10	\$54.00	\$540.00			0		0	\$0.00	\$0.00
Oiler			1	10	\$50.00	\$500.00			0		0	\$0.00	\$0.00
				0	\$0.00	\$0.00			0		0	\$0.00	\$0.00
				0	\$0.00	\$0.00			0		0	\$0.00	\$0.00
				0	\$0.00	\$0.00			0		0	\$0.00	\$0.00
				0	\$0.00	\$0.00			0		0	\$0.00	\$0.00
				0	\$0.00	\$0.00			0		0	\$0.00	\$0.00
				0	\$0.00	\$0.00			0		0	\$0.00	\$0.00
				0	\$0.00	\$0.00			0		0	\$0.00	\$0.00
17% OT				0		\$515.10			0		0	\$0.00	\$0.00
BARE UNIT COST		\$2.36	TOTAL LABOR COST		\$3,545.10		BARE UNIT COS		\$0.00	0	TOTAL SES COST		\$0.00
MATERIAL / SERVICES		QUANTITY UNITS	UNIT COST		TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	HRLY RATE	TOTAL COST	
FOG GAL		290	\$4.00		\$1,160.00	Derrick Rig		125	1	10	\$776.00	\$7,760.00	
Equipment Repair 7%		1	\$663.60		\$663.60	Material Scow		0	3	30	\$85.00	\$2,550.00	
PPE		6	\$15.00		\$90.00	Tug		150	1	10	\$60.00	\$600.00	
					\$0.00	Work Boat		15	2	20	\$56.00	\$1,120.00	
					\$0.00	Clam Bucket		0	1	10	\$48.00	\$480.00	
					\$0.00			0		0	\$0.00	\$0.00	
					\$0.00			0		0	\$0.00	\$0.00	
					\$0.00			0		0	\$0.00	\$0.00	
					\$0.00			0		0	\$0.00	\$0.00	
					\$0.00			0		0	\$0.00	\$0.00	
					\$0.00			0		0	\$0.00	\$0.00	
					\$0.00			0		0	\$0.00	\$0.00	
					\$0.00			0		0	\$0.00	\$0.00	
					\$0.00			0		0	\$0.00	\$0.00	
					\$0.00			0		0	\$0.00	\$0.00	
TAX AT 8%					\$153.09	TAX AT 8%		0		0	\$0.00	\$1,000.80	
BARE UNIT COST		\$1.38	TOTAL MATERIAL COST		\$2,066.69		BARE UNIT COS		\$9.01	290	TOTAL RENTED EQUIP		\$13,510.80

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Table 16. EMNR Layer Placement

ESTIMATE WORKSHEET 7.1.1													
BID DATE		PROJECT LOCATION					DESCRIPTION OF ITEM					ITEM NO.	
												7.1.1	
						PRODUCTION DATA							
TOTAL QUANTITY ON PROPOSAL		1,200 Ton					HOURS PER SHIFT	SHIFTS PER DAY	DAYS PER WEEK	DAILY UNIT PRODUCTION RATE		DAYS REQ. TO COMPLETE	
QUANTITY							10	1	6	1,200		1	
ESTIMATE WORKSHEET			TOTAL LABOR		TOTAL MATERIAL		TOTAL EQUIPMENT	TOTAL RENTED EQUIPMENT		TOTAL SUB-CONTRACTOR		TOTAL	
WORKSHEET 7.1.1			\$3,545.10		\$2,066.69		\$0.00	\$13,510.80		\$2,000.00		\$21,122.59	
												\$0.00	
												\$0.00	
GRAND TOTALS			\$3,545.10		\$2,066.69		\$0.00	\$13,510.80		\$2,000.00		\$21,122.59	
UNIT PRICES			\$2.95		\$1.72		\$0.00	\$11.26		\$1.67			
SUB-CONTRACTOR		WORK TO PERFORM	QUANTITY UNITS	UNIT COST		TOTAL COST	Base (1200 Ton / day)		UNIT PRICE		\$17.60		
						UNIT OF MEASURE			Ton				
Survey/ Crew/ Boat					\$2,000.00	OH&P			25%		\$22.0		
					\$0.00								
					\$0.00								
						\$0.00							
						\$0.00							
BARE UNIT COST		\$0.00	TOTAL COST		\$2,000.00								
LABOR CLASSIFICATION		WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HLRLY RATE	TOTAL COST	OWN EQUIPMENT	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	HLRLY RATE	TOTAL COST
Crane Operator			1	10	\$51.00	\$510.00			0		0	\$0.00	\$0.00
Deck Hand			4	40	\$37.00	\$1,480.00			0		0	\$0.00	\$0.00
Tug Captain			1	10	\$54.00	\$540.00			0		0	\$0.00	\$0.00
Oiler			1	10	\$50.00	\$500.00			0		0	\$0.00	\$0.00
				0	\$0.00	\$0.00			0		0	\$0.00	\$0.00
				0	\$0.00	\$0.00			0		0	\$0.00	\$0.00
				0	\$0.00	\$0.00			0		0	\$0.00	\$0.00
				0	\$0.00	\$0.00			0		0	\$0.00	\$0.00
				0	\$0.00	\$0.00			0		0	\$0.00	\$0.00
				0	\$0.00	\$0.00			0		0	\$0.00	\$0.00
				0	\$0.00	\$0.00			0		0	\$0.00	\$0.00
17% OT				0		\$515.10			0		0	\$0.00	\$0.00
BARE UNIT COST		\$2.95	TOTAL LABOR COST		\$3,545.10		BARE UNIT COS		\$0.00	0	TOTAL SES COST		\$0.00
MATERIAL / SERVICES			QUANTITY UNITS	UNIT COST		TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	HLRLY RATE	TOTAL COST
FOG GAL			290	\$4.00		\$1,160.00	Derrick Rig		125	1	10	\$776.00	\$7,760.00
Equipment Repair		7%	1	\$663.60		\$663.60	Material Scow		0	3	30	\$85.00	\$2,550.00
PPE			6	\$15.00		\$90.00	Tug		150	1	10	\$60.00	\$600.00
						\$0.00	Work Boat		15	2	20	\$56.00	\$1,120.00
						\$0.00	Clam Bucket		0	1	10	\$48.00	\$480.00
						\$0.00			0		0	\$0.00	\$0.00
						\$0.00			0		0	\$0.00	\$0.00
						\$0.00			0		0	\$0.00	\$0.00
						\$0.00			0		0	\$0.00	\$0.00
						\$0.00			0		0	\$0.00	\$0.00
						\$0.00			0		0	\$0.00	\$0.00
						\$0.00			0		0	\$0.00	\$0.00
						\$0.00			0		0	\$0.00	\$0.00
						\$0.00			0		0	\$0.00	\$0.00
TAX AT 8%						\$153.09	TAX AT 8%		0		0	\$0.00	\$1,000.80
BARE UNIT COST		\$1.72	TOTAL MATERIAL COST		\$2,066.69		BARE UNIT COS		\$11.26	290	TOTAL RENTED EQUIP		\$13,510.80

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Table 17. Residuals Cap Placement

ESTIMATE WORKSHEET 7.1.2													
Residuals Cap Placement													
BID DATE		PROJECT LOCATION					DESCRIPTION OF ITEM					ITEM NO.	
												7.1.2	
						PRODUCTION DATA							
TOTAL QUANTITY ON PROPOSAL		1,200 Ton					HOURS PER SHIFT	SHIFTS PER DAY	DAYS PER WEEK		DAILY UNIT PRODUCTION RATE		DAYS REQ. TO COMPLETE
QUANTITY						10	1	6		1,200		1	
ESTIMATE WORKSHEET		TOTAL LABOR		TOTAL MATERIAL		TOTAL EQUIPMENT	TOTAL RENTED EQUIPMENT		TOTAL SUB-CONTRACTOR		TOTAL		
WORKSHEET 7.1.2		\$3,545.10		\$2,066.69		\$0.00	\$13,510.80		\$2,000.00		\$21,122.59		
											\$0.00		
											\$0.00		
GRAND TOTALS		\$3,545.10		\$2,066.69		\$0.00	\$13,510.80		\$2,000.00		\$21,122.59		
UNIT PRICES		\$2.95		\$1.72		\$0.00	\$11.26		\$1.67				
SUB-CONTRACTOR		WORK TO PERFORM	QUANTITY UNITS	UNIT COST		TOTAL COST	Base (1200 Ton / day)		UNIT PRICE		\$17.60		
						UNIT OF MEASURE			Ton				
Survey/ Crew/ Boat					\$2,000.00	OH&P			25%		\$22.0		
					\$0.00								
					\$0.00								
					\$0.00								
					\$0.00								
BARE UNIT COST		\$0.00	TOTAL COST		\$2,000.00								
LABOR CLASSIFICATION		WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	OWN EQUIPMENT	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	HRLY RATE	TOTAL COST
Crane Operator			1	10	\$51.00	\$510.00			0		0	\$0.00	\$0.00
Deck Hand			4	40	\$37.00	\$1,480.00			0		0	\$0.00	\$0.00
Tug Captain			1	10	\$54.00	\$540.00			0		0	\$0.00	\$0.00
Oiler			1	10	\$50.00	\$500.00			0		0	\$0.00	\$0.00
				0	\$0.00	\$0.00			0		0	\$0.00	\$0.00
				0	\$0.00	\$0.00			0		0	\$0.00	\$0.00
				0	\$0.00	\$0.00			0		0	\$0.00	\$0.00
				0	\$0.00	\$0.00			0		0	\$0.00	\$0.00
				0	\$0.00	\$0.00			0		0	\$0.00	\$0.00
				0	\$0.00	\$0.00			0		0	\$0.00	\$0.00
				0	\$0.00	\$0.00			0		0	\$0.00	\$0.00
17% OT				0		\$515.10			0		0	\$0.00	\$0.00
BARE UNIT COST		\$2.95	TOTAL LABOR COST		\$3,545.10		BARE UNIT COS		\$0.00	0	TOTAL SES COST		\$0.00
MATERIAL / SERVICES		QUANTITY UNITS	UNIT COST		TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	HRLY RATE	TOTAL COST	
FOG GAL		290	\$4.00		\$1,160.00	Derrick Rig		125	1	10	\$776.00	\$7,760.00	
Equipment Repair 7%		1	\$663.60		\$663.60	Material Scow		0	3	30	\$85.00	\$2,550.00	
PPE		6	\$15.00		\$90.00	Tug		150	1	10	\$60.00	\$600.00	
					\$0.00	Work Boat		15	2	20	\$56.00	\$1,120.00	
					\$0.00	Clam Bucket		0	1	10	\$48.00	\$480.00	
					\$0.00			0		0	\$0.00	\$0.00	
					\$0.00			0		0	\$0.00	\$0.00	
					\$0.00			0		0	\$0.00	\$0.00	
					\$0.00			0		0	\$0.00	\$0.00	
					\$0.00			0		0	\$0.00	\$0.00	
					\$0.00			0		0	\$0.00	\$0.00	
					\$0.00			0		0	\$0.00	\$0.00	
					\$0.00			0		0	\$0.00	\$0.00	
					\$0.00			0		0	\$0.00	\$0.00	
					\$0.00			0		0	\$0.00	\$0.00	
TAX AT 8%					\$153.09	TAX AT 8%		0		0	\$0.00	\$1,000.80	
BARE UNIT COST		\$1.72	TOTAL MATERIAL COST		\$2,066.69		BARE UNIT COS		\$11.26	290	TOTAL RENTED EQUIP		\$13,510.80

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Table 18. Backfill Placement

ESTIMATE WORKSHEET 7.1.3													
BACKFILL PLACEMENT													
BID DATE		PROJECT LOCATION					DESCRIPTION OF ITEM					ITEM NO.	
												7.1.3	
						PRODUCTION DATA							
TOTAL QUANTITY ON PROPOSAL	1,500 Ton							HOURS PER SHIFT	SHIFTS PER DAY	DAYS PER WEEK	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE	
QUANTITY								10	1	6	1,500	1	
ESTIMATE WORKSHEET		TOTAL LABOR		TOTAL MATERIAL		TOTAL EQUIPMENT	TOTAL RENTED EQUIPMENT		TOTAL SUB-CONTRACTOR		TOTAL		
WORKSHEET 7.1.3		\$3,545.10		\$2,066.69		\$0.00	\$13,510.80		\$2,000.00		\$21,122.59		
											\$0.00		
											\$0.00		
											\$0.00		
GRAND TOTALS		\$3,545.10		\$2,066.69		\$0.00	\$13,510.80		\$2,000.00		\$21,122.59		
UNIT PRICES		\$2.36		\$1.38		\$0.00	\$9.01		\$1.33				
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST		TOTAL COST		Base (1500 Ton / day)	UNIT PRICE		\$14.08			
								UNIT OF MEASURE		Ton			
Survey/ Crew/ Boat					\$2,000.00			OH&P		25%	\$17.60		
					\$0.00								
					\$0.00								
					\$0.00								
					\$0.00								
					\$0.00								
BARE UNIT COST		\$0.00	TOTAL COST			\$2,000.00							
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	OWN EQUIPMENT	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	HRLY RATE	TOTAL COST	
Crane Operator		1	10	\$51.00	\$510.00			0		0	\$0.00	\$0.00	
Deck Hand		4	40	\$37.00	\$1,480.00			0		0	\$0.00	\$0.00	
Tug Captain		1	10	\$54.00	\$540.00			0		0	\$0.00	\$0.00	
Oiler		1	10	\$50.00	\$500.00			0		0	\$0.00	\$0.00	
			0	\$0.00	\$0.00			0		0	\$0.00	\$0.00	
			0	\$0.00	\$0.00			0		0	\$0.00	\$0.00	
			0	\$0.00	\$0.00			0		0	\$0.00	\$0.00	
			0	\$0.00	\$0.00			0		0	\$0.00	\$0.00	
			0	\$0.00	\$0.00			0		0	\$0.00	\$0.00	
			0	\$0.00	\$0.00			0		0	\$0.00	\$0.00	
			0	\$0.00	\$0.00			0		0	\$0.00	\$0.00	
17% OT			0		\$515.10			0		0	\$0.00	\$0.00	
BARE UNIT COST		\$2.36	TOTAL LABOR COST			BARE UNIT COS \$0.00		0	TOTAL SES COST \$0.00				
MATERIAL / SERVICES		QUANTITY UNITS	UNIT COST		TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	HRLY RATE	TOTAL COST	
FOG	GAL	290	\$4.00		\$1,160.00	Derrick Rig		125	1	10	\$776.00	\$7,760.00	
Equipment Repair	7%	1	\$663.60		\$663.60	Material Scow		0	3	30	\$85.00	\$2,550.00	
PPE		6	\$15.00		\$90.00	Tug		150	1	10	\$60.00	\$600.00	
					\$0.00	Work Boat		15	2	20	\$56.00	\$1,120.00	
					\$0.00	Clam Bucket		0	1	10	\$48.00	\$480.00	
					\$0.00			0		0	\$0.00	\$0.00	
					\$0.00			0		0	\$0.00	\$0.00	
					\$0.00			0		0	\$0.00	\$0.00	
					\$0.00			0		0	\$0.00	\$0.00	
					\$0.00			0		0	\$0.00	\$0.00	
					\$0.00			0		0	\$0.00	\$0.00	
					\$0.00			0		0	\$0.00	\$0.00	
					\$0.00			0		0	\$0.00	\$0.00	
					\$0.00			0		0	\$0.00	\$0.00	
TAX AT 8%					\$153.09	TAX AT 8%		0		0	\$0.00	\$1,000.80	
BARE UNIT COST		\$1.38	TOTAL MATERIAL COST			BARE UNIT COS		\$9.01	290	TOTAL RENTED EQUIP \$13,510.80			

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Table 19. Confined Underpier Capping

ESTIMATE WORKSHEET 7.2													
CONFINED AREA CAPPING													
BID DATE		PROJECT LOCATION					DESCRIPTION OF ITEM					ITEM NO.	
												7.2	
						PRODUCTION DATA							
TOTAL QUANTITY ON PROPOSAL	500 TON					HOURS PER SHIFT	SHIFTS PER DAY	DAYS PER WEEK	DAILY UNIT PRODUCTION RATE		DAYS REQ. TO COMPLETE		
QUANTITY						10	1	6	500		1		
ESTIMATE WORKSHEET		TOTAL LABOR		TOTAL MATERIAL		TOTAL EQUIPMENT	TOTAL RENTED EQUIPMENT		TOTAL SUB-CONTRACTOR		TOTAL		
WORKSHEET 7.2		\$3,159.00		\$1,439.53		\$0.00	\$7,894.80		\$2,000.00		\$14,493.33		
											\$0.00		
											\$0.00		
											\$0.00		
GRAND TOTALS		\$3,159.00		\$1,439.53		\$0.00	\$7,894.80		\$2,000.00		\$14,493.33		
UNIT PRICES		\$6.32		\$2.88		\$0.00	\$15.79		\$4.00				
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST		TOTAL COST		Base (500 Ton / day) Armor (567 Ton/day)	UNIT COST		\$28.99			
Survey/ Crew/ Boat					\$2,000.00			UNIT OF MEASURE		TON			
					\$0.00			OH&P		25%	\$36.20		
					\$0.00			OH&P		25%	\$32.00		
					\$0.00								
					\$0.00								
BARE UNIT COST		\$4.00	TOTAL COST			\$2,000.00							
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	OWN EQUIPMENT	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	HRLY RATE	TOTAL COST	
600 Hoe Operator	Hoe	1	10	\$46.00	\$460.00			0	0	10	\$45.00	\$0.00	
Tug Captain		1	10	\$54.00	\$540.00			0	0	10	\$100.00	\$0.00	
Boat Operator		1	10	\$50.00	\$500.00			0	0	10	\$10.00	\$0.00	
Deck Hand		2	10	\$37.00	\$740.00			0		0	\$0.00	\$0.00	
Telebelt Operator	Place Cap	1	10	\$46.00	\$460.00			0		0	\$0.00	\$0.00	
			0	\$0.00	\$0.00			0		0	\$0.00	\$0.00	
			0	\$0.00	\$0.00			0		0	\$0.00	\$0.00	
			0	\$0.00	\$0.00			0		0	\$0.00	\$0.00	
			0	\$0.00	\$0.00			0		0	\$0.00	\$0.00	
			0	\$0.00	\$0.00			0		0	\$0.00	\$0.00	
			0	\$0.00	\$0.00			0		0	\$0.00	\$0.00	
17% OT			0		\$459.00			0		0	\$0.00	\$0.00	
BARE UNIT COST		\$6.32	TOTAL LABOR COST			\$3,159.00		BARE UNIT COS \$0.00		0	TOTAL SES COST \$0.00		
MATERIAL / SERVICES		QUANTITY UNITS	UNIT COST		TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	HRLY RATE	TOTAL COST	
FOG	GAL	285	\$4.00		\$1,140.00	PC 600	Load	60	1	10	\$82.00	\$820.00	
Equipment Repairs	7%	1	\$102.90		\$102.90	Tug		150	1	10	\$16.00	\$160.00	
PPE		6	\$15.00		\$90.00	Work Boat		15	1	10	\$56.00	\$560.00	
						Barge		0	6	60	\$54.00	\$3,240.00	
					\$0.00	Scows		0	2	20	\$68.00	\$1,360.00	
					\$0.00	Push Boat	Move	20	1	10	\$40.00	\$400.00	
					\$0.00	Spuds		0	4	40	\$2.00	\$80.00	
					\$0.00	Spud wells		0	4	40	\$1.00	\$40.00	
					\$0.00	Telebelt		40	1	10	\$65.00	\$650.00	
					\$0.00			0	0	0	\$0.00	\$0.00	
					\$0.00			0	0	0	\$0.00	\$0.00	
					\$0.00			0		0	\$0.00	\$0.00	
					\$0.00			0		0	\$0.00	\$0.00	
					\$0.00			0		0	\$0.00	\$0.00	
TAX AT 8%					\$106.63	TAX at 8%		0		0	\$0.00	\$584.80	
BARE UNIT COST		\$2.88	TOTAL MATERIAL COST			\$1,439.53		BARE UNIT COS \$15.79		285	TOTAL RENTED EQUIP \$7,894.80		

Table 20. Confined EMNR Layer Placement

ESTIMATE WORKSHEET 7.2.1															
CONFINED AREA EMNR															
BID DATE		PROJECT LOCATION					DESCRIPTION OF ITEM					ITEM NO.			
												7.2.1			
						PRODUCTION DATA									
TOTAL QUANTITY ON PROPOSAL		400 TON					HOURS PER SHIFT	SHIFTS PER DAY	DAYS PER WEEK	DAILY UNIT PRODUCTION RATE		DAYS REQ. TO COMPLETE			
QUANTITY						10	1	6	400		1				
ESTIMATE WORKSHEET				TOTAL LABOR		TOTAL MATERIAL		TOTAL EQUIPMENT	TOTAL RENTED EQUIPMENT		TOTAL SUB-CONTRACTOR		TOTAL		
WORKSHEET 7.2.1				\$3,159.00		\$1,439.53		\$0.00	\$7,894.80		\$2,000.00		\$14,493.33		
													\$0.00		
													\$0.00		
													\$0.00		
GRAND TOTALS				\$3,159.00		\$1,439.53		\$0.00	\$7,894.80		\$2,000.00		\$14,493.33		
UNIT PRICES				\$7.90		\$3.60		\$0.00	\$19.74		\$5.00				
SUB-CONTRACTOR		WORK TO PERFORM	QUANTITY UNITS	UNIT COST		TOTAL COST		Base (400 Ton / day)		UNIT COST		\$36.23			
Survey/ Crew/ Boat					\$2,000.00		UNIT OF MEASURE			TON					
					\$0.00		OH&P			25%	\$45.30				
					\$0.00										
					\$0.00										
					\$0.00										
BARE UNIT COST		\$5.00		TOTAL COST		\$2,000.00									
LABOR CLASSIFICATION		WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	OWN EQUIPMENT	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	HRLY RATE	TOTAL COST		
600 Hoe Operator		Hoe	1	10	\$46.00	\$460.00			0	0	10	\$45.00	\$0.00		
Tug Captain			1	10	\$54.00	\$540.00			0	0	10	\$100.00	\$0.00		
Boat Operator			1	10	\$50.00	\$500.00			0	0	10	\$10.00	\$0.00		
Deck Hand			2	10	\$37.00	\$740.00			0		0	\$0.00	\$0.00		
Telebelt Operator		Place Cap	1	10	\$46.00	\$460.00			0		0	\$0.00	\$0.00		
				0	\$0.00	\$0.00			0		0	\$0.00	\$0.00		
				0	\$0.00	\$0.00			0		0	\$0.00	\$0.00		
				0	\$0.00	\$0.00			0		0	\$0.00	\$0.00		
				0	\$0.00	\$0.00			0		0	\$0.00	\$0.00		
				0	\$0.00	\$0.00			0		0	\$0.00	\$0.00		
				0	\$0.00	\$0.00			0		0	\$0.00	\$0.00		
17% OT				0		\$459.00			0		0	\$0.00	\$0.00		
BARE UNIT COST		\$7.90		TOTAL LABOR COST		\$3,159.00									
						BARE UNIT COS		\$0.00		0		TOTAL SES COST		\$0.00	
MATERIAL / SERVICES		QUANTITY UNITS		UNIT COST			TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	HRLY RATE	TOTAL COST	
FOG		GAL	285	\$4.00		\$1,140.00	PC 600	Load	60	1	10	\$82.00	\$820.00		
Equipment Repairs		7%	1	\$102.90		\$102.90	Tug		150	1	10	\$16.00	\$160.00		
PPE				6	\$15.00		\$90.00	Work Boat		15	1	10	\$56.00	\$560.00	
								Barge		0	6	60	\$54.00	\$3,240.00	
						\$0.00		Scows		0	2	20	\$68.00	\$1,360.00	
						\$0.00		Push Boat	Move	20	1	10	\$40.00	\$400.00	
						\$0.00		Spuds		0	4	40	\$2.00	\$80.00	
						\$0.00		Spud wells		0	4	40	\$1.00	\$40.00	
						\$0.00		Telebelt		40	1	10	\$65.00	\$650.00	
						\$0.00				0	0	0	\$0.00	\$0.00	
						\$0.00				0	0	0	\$0.00	\$0.00	
						\$0.00				0		0	\$0.00	\$0.00	
						\$0.00				0		0	\$0.00	\$0.00	
						\$0.00				0		0	\$0.00	\$0.00	
						\$0.00				0		0	\$0.00	\$0.00	
TAX AT 8%							\$106.63	TAX at 8%		0		0	\$0.00	\$584.80	
BARE UNIT COST		\$3.60		TOTAL MATERIAL COST		\$1,439.53									
						BARE UNIT COS		\$19.74		285		TOTAL RENTED EQUIP		\$7,894.80	

Table 21. Confined Residuals Cap Placement

ESTIMATE WORKSHEET 7.2.2													
CONFINED AREA RESIDUALS													
BID DATE		PROJECT LOCATION					DESCRIPTION OF ITEM					ITEM NO.	
												7.2.2	
						PRODUCTION DATA							
TOTAL QUANTITY ON PROPOSAL	400 TON					HOURS PER SHIFT	SHIFTS PER DAY	DAYS PER WEEK	DAILY UNIT PRODUCTION RATE		DAYS REQ. TO COMPLETE		
QUANTITY						10	1	6	400		1		
ESTIMATE WORKSHEET		TOTAL LABOR			TOTAL MATERIAL		TOTAL EQUIPMENT	TOTAL RENTED EQUIPMENT		TOTAL SUB-CONTRACTOR		TOTAL	
WORKSHEET 7.2.2		\$3,159.00			\$1,439.53		\$0.00	\$7,894.80		\$2,000.00		\$14,493.33	
												\$0.00	
												\$0.00	
												\$0.00	
GRAND TOTALS		\$3,159.00			\$1,439.53		\$0.00	\$7,894.80		\$2,000.00		\$14,493.33	
UNIT PRICES		\$7.90			\$3.60		\$0.00	\$19.74		\$5.00			
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST		TOTAL COST		Base (400 Ton / day)	UNIT COST		\$36.23			
Survey/ Crew/ Boat					\$2,000.00			UNIT OF MEASURE		TON			
					\$0.00			OH&P		25%		\$45.30	
					\$0.00								
					\$0.00								
					\$0.00								
BARE UNIT COST		\$5.00	TOTAL COST			\$2,000.00							
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	OWN EQUIPMENT	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	HRLY RATE	TOTAL COST	
600 Hoe Operator	Hoe	1	10	\$46.00	\$460.00			0	0	10	\$45.00	\$0.00	
Tug Captain		1	10	\$54.00	\$540.00			0	0	10	\$100.00	\$0.00	
Boat Operator		1	10	\$50.00	\$500.00			0	0	10	\$10.00	\$0.00	
Deck Hand		2	10	\$37.00	\$740.00			0		0	\$0.00	\$0.00	
Telebelt Operator	Place Cap	1	10	\$46.00	\$460.00			0		0	\$0.00	\$0.00	
			0	\$0.00	\$0.00			0		0	\$0.00	\$0.00	
			0	\$0.00	\$0.00			0		0	\$0.00	\$0.00	
			0	\$0.00	\$0.00			0		0	\$0.00	\$0.00	
			0	\$0.00	\$0.00			0		0	\$0.00	\$0.00	
			0	\$0.00	\$0.00			0		0	\$0.00	\$0.00	
			0	\$0.00	\$0.00			0		0	\$0.00	\$0.00	
			0	\$0.00	\$0.00			0		0	\$0.00	\$0.00	
17% OT			0		\$459.00			0		0	\$0.00	\$0.00	
BARE UNIT COST		\$7.90	TOTAL LABOR COST			\$3,159.00		BARE UNIT COS \$0.00		0	TOTAL SES COST \$0.00		
MATERIAL / SERVICES		QUANTITY UNITS	UNIT COST		TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	HRLY RATE	TOTAL COST	
FOG	GAL	285	\$4.00		\$1,140.00	PC 600	Load	60	1	10	\$82.00	\$820.00	
Equipment Repairs	7%	1	\$102.90		\$102.90	Tug		150	1	10	\$16.00	\$160.00	
PPE		6	\$15.00		\$90.00	Work Boat		15	1	10	\$56.00	\$560.00	
						Barge		0	6	60	\$54.00	\$3,240.00	
					\$0.00	Scows		0	2	20	\$68.00	\$1,360.00	
					\$0.00	Push Boat	Move	20	1	10	\$40.00	\$400.00	
					\$0.00	Spuds		0	4	40	\$2.00	\$80.00	
					\$0.00	Spud wells		0	4	40	\$1.00	\$40.00	
					\$0.00	Telebelt		40	1	10	\$65.00	\$650.00	
					\$0.00			0	0	0	\$0.00	\$0.00	
					\$0.00			0	0	0	\$0.00	\$0.00	
					\$0.00			0		0	\$0.00	\$0.00	
					\$0.00			0		0	\$0.00	\$0.00	
					\$0.00			0		0	\$0.00	\$0.00	
					\$0.00			0		0	\$0.00	\$0.00	
TAX AT 8%					\$106.63	TAX at 8%		0		0	\$0.00	\$584.80	
BARE UNIT COST		\$3.60	TOTAL MATERIAL COST			\$1,439.53		BARE UNIT COS \$19.74		285	TOTAL RENTED EQUIP \$7,894.80		

Table 22. Confined Backfill Placement

ESTIMATE WORKSHEET 7.2.3															
CONFINED AREA BACKFILL															
BID DATE		PROJECT LOCATION					DESCRIPTION OF ITEM					ITEM NO.			
												7.2.3			
						PRODUCTION DATA									
TOTAL QUANTITY ON PROPOSAL		500 TON					HOURS PER SHIFT	SHIFTS PER DAY	DAYS PER WEEK	DAILY UNIT PRODUCTION RATE		DAYS REQ. TO COMPLETE			
QUANTITY						10	1	6	500		1				
ESTIMATE WORKSHEET				TOTAL LABOR		TOTAL MATERIAL		TOTAL EQUIPMENT	TOTAL RENTED EQUIPMENT		TOTAL SUB-CONTRACTOR		TOTAL		
WORKSHEET 7.2.3				\$3,159.00		\$1,439.53		\$0.00	\$7,894.80		\$2,000.00		\$14,493.33		
													\$0.00		
													\$0.00		
													\$0.00		
GRAND TOTALS				\$3,159.00		\$1,439.53		\$0.00	\$7,894.80		\$2,000.00		\$14,493.33		
UNIT PRICES				\$6.32		\$2.88		\$0.00	\$15.79		\$4.00				
SUB-CONTRACTOR		WORK TO PERFORM	QUANTITY UNITS	UNIT COST		TOTAL COST		Base (500 Ton / day)		UNIT COST		\$28.99			
Survey/ Crew/ Boat					\$2,000.00		UNIT OF MEASURE			TON					
					\$0.00		OH&P 25%			\$36.30					
					\$0.00										
					\$0.00										
					\$0.00										
BARE UNIT COST		\$4.00		TOTAL COST				\$2,000.00							
LABOR CLASSIFICATION		WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	OWN EQUIPMENT	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	HRLY RATE	TOTAL COST		
600 Hoe Operator		Hoe	1	10	\$46.00	\$460.00			0	0	10	\$45.00	\$0.00		
Tug Captain			1	10	\$54.00	\$540.00			0	0	10	\$100.00	\$0.00		
Boat Operator			1	10	\$50.00	\$500.00			0	0	10	\$10.00	\$0.00		
Deck Hand			2	10	\$37.00	\$740.00			0		0	\$0.00	\$0.00		
Telebelt Operator		Place Cap	1	10	\$46.00	\$460.00			0		0	\$0.00	\$0.00		
				0	\$0.00	\$0.00			0		0	\$0.00	\$0.00		
				0	\$0.00	\$0.00			0		0	\$0.00	\$0.00		
				0	\$0.00	\$0.00			0		0	\$0.00	\$0.00		
				0	\$0.00	\$0.00			0		0	\$0.00	\$0.00		
				0	\$0.00	\$0.00			0		0	\$0.00	\$0.00		
				0	\$0.00	\$0.00			0		0	\$0.00	\$0.00		
17% OT				0		\$459.00			0		0	\$0.00	\$0.00		
BARE UNIT COST		\$6.32		TOTAL LABOR COST				\$3,159.00		BARE UNIT COS \$0.00		0	TOTAL SES COST		\$0.00
MATERIAL / SERVICES			QUANTITY UNITS	UNIT COST		TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	HRLY RATE	TOTAL COST		
FOG			GAL 285	\$4.00		\$1,140.00	PC 600	Load	60	1	10	\$82.00	\$820.00		
Equipment Repairs			7% 1	\$102.90		\$102.90	Tug		150	1	10	\$16.00	\$160.00		
PPE			6	\$15.00		\$90.00	Work Boat		15	1	10	\$56.00	\$560.00		
							Barge		0	6	60	\$54.00	\$3,240.00		
						\$0.00	Scows		0	2	20	\$68.00	\$1,360.00		
						\$0.00	Push Boat	Move	20	1	10	\$40.00	\$400.00		
						\$0.00	Spuds		0	4	40	\$2.00	\$80.00		
						\$0.00	Spud wells		0	4	40	\$1.00	\$40.00		
						\$0.00	Telebelt		40	1	10	\$65.00	\$650.00		
						\$0.00			0	0	0	\$0.00	\$0.00		
						\$0.00			0	0	0	\$0.00	\$0.00		
						\$0.00			0		0	\$0.00	\$0.00		
						\$0.00			0		0	\$0.00	\$0.00		
						\$0.00			0		0	\$0.00	\$0.00		
						\$0.00			0		0	\$0.00	\$0.00		
TAX AT 8%						\$106.63	TAX at 8%		0		0	\$0.00	\$584.80		
BARE UNIT COST		\$2.88		TOTAL MATERIAL COST				\$1,439.53		BARE UNIT COS \$15.79		285	TOTAL RENTED EQUIP		\$7,894.80



Table 23. Organoclay Mat

ESTIMATE WORKSHEET 7.3												
ORGANOCLAY MAT												
BID DATE		PROJECT LOCATION					DESCRIPTION OF ITEM				ITEM NO.	
											7.3	
						PRODUCTION DATA						
TOTAL QUANTITY ON PROPOSAL	12,000 SF					HOURS PER SHIFT	SHIFTS PER DAY	DAYS PER WEEK	DAILY UNIT PRODUCTION RATE		DAYS REQ. TO COMPLETE	
QUANTITY						10	1	6	12,000		1	
ESTIMATE WORKSHEET		TOTAL LABOR		TOTAL MATERIAL		TOTAL EQUIPMENT	TOTAL RENTED EQUIPMENT		TOTAL SUB-CONTRACTOR		TOTAL	
		\$4,083.30		\$35,964.00		\$0.00	\$3,207.60		\$12,000.00		\$55,254.90	
											\$5,525.49	
											\$0.00	
											\$0.00	
GRAND TOTALS		\$4,083.30		\$35,964.00		\$0.00	\$3,207.60		\$12,000.00		\$60,780.39	
UNIT PRICES		\$0.34		\$3.00		\$0.00	\$0.27		\$1.00			
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST		TOTAL COST		Open Confined (30% Open)	UNIT PRICE		\$5.07		
								UNIT OF MEASURE		SF		
Divers	1	\$10,000.00		\$10,000.00	OH&P 25%			\$6.30				
Survey/ Crew/ Boat			\$2,000.00	OH&P 25%				\$21.10				
			\$0.00									
			\$0.00									
			\$0.00									
BARE UNIT COST		\$1.00	TOTAL COST			\$12,000.00						
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	OWN EQUIPMENT	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	HRLY RATE	TOTAL COST
Tug Captain		1	10	\$54.00	\$540.00			0		0	\$0.00	\$0.00
Crane Operator		1	10	\$51.00	\$510.00			0		0	\$0.00	\$0.00
Oiler		1	10	\$50.00	\$500.00			0		0	\$0.00	\$0.00
Operator		1	10	\$46.00	\$460.00			0		0	\$0.00	\$0.00
Labor		4	10	\$37.00	\$1,480.00			0		0	\$0.00	\$0.00
			0	\$0.00	\$0.00			0		0	\$0.00	\$0.00
			0	\$0.00	\$0.00			0		0	\$0.00	\$0.00
			0	\$0.00	\$0.00			0		0	\$0.00	\$0.00
			0	\$0.00	\$0.00			0		0	\$0.00	\$0.00
			0	\$0.00	\$0.00			0		0	\$0.00	\$0.00
			0	\$0.00	\$0.00			0		0	\$0.00	\$0.00
17% OT			0		\$593.30			0		0	\$0.00	\$0.00
BARE UNIT COST		\$0.34	TOTAL LABOR COST			\$4,083.30		BARE UNIT COS \$0.00		0	TOTAL SES COST \$0.00	
MATERIAL / SERVICES		QUANTITY UNITS	UNIT COST		TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	HRLY RATE	TOTAL COST
FOG GAL		195	\$4.00		\$780.00	TUG		150	1	10	\$60.00	\$600.00
Reactive Core Mat (15% loss)		12,000	\$2.70		\$32,400.00	Crane w/ Barge		0	1	10	\$111.00	\$1,110.00
PPE		8	\$15.00		\$120.00	Material Barge		0	1	10	\$54.00	\$540.00
					\$0.00	Forklift		30	1	10	\$16.00	\$160.00
					\$0.00	Work Boat		15	1	10	\$56.00	\$560.00
					\$0.00			0		0	\$0.00	\$0.00
					\$0.00			0		0	\$0.00	\$0.00
					\$0.00			0		0	\$0.00	\$0.00
					\$0.00			0		0	\$0.00	\$0.00
					\$0.00			0		0	\$0.00	\$0.00
					\$0.00			0		0	\$0.00	\$0.00
					\$0.00			0		0	\$0.00	\$0.00
					\$0.00			0		0	\$0.00	\$0.00
					\$0.00			0		0	\$0.00	\$0.00
TAX AT 8%					\$2,664.00	TAX at 8%		0		0	\$0.00	\$237.60
BARE UNIT COST		\$3.00	TOTAL MATERIAL COST			\$35,964.00		BARE UNIT COS \$0.27		195	TOTAL RENTED EQUIP \$3,207.60	

DO NOT QUOTE OR CITE

This document is currently under review by US EPA and its federal, state, and tribal partners, and is subject to change in whole or in part.

Table 24. Upland Subtitle D Landfill Disposal Cost Buildup

Task	Unit	Quantity	Unit Cost	Total Cost	Basis/Notes
Transload Facility Development					
Transload facility permitting	LS	1	\$40,000	\$5,000	(1); Based on past experience normalized over total landfill disposal volume
Transload facility development	LS	1	\$7,500,000	\$863,000	(1,2); One time cost normalized over total estimated landfill disposal volume
Yearly property lease rate	ACRE	20	\$23,500	\$470,000	(3); Lease rate based on Port of Portland T6 public records.
Yearly gondola mobilization	Cars	500	\$4,000	\$2,000,000	(4); Car mobilization price from Waste Management
Materials Handling and Stabilization					
Materials handling from barge to upland stockpile	TON	345,000	\$6	\$2,070,000	(5); Offloading rate based on crane on dock and off-road trucks hauling to stockpile
Purchase Diatomaceous Earth (DE)	TON	17,250	\$94	\$1,622,000	Assumed 5% by weight mixing rate. DE price from Waste Management
Mix DE with dredged material to improve handling	TON	17,250	\$2	\$35,000	Cost based on end loader mixing DE and dredge material
Materials handling from stockpile to rail cars	TON	362,250	\$5	\$1,811,000	Cost assumes end loaders loading to rail cars on each side of stockpiles
Water treatment	1,000 gal	7,500	\$10	\$75,000	(6); Water treatment cost based on recent construction project.
Transportation and Disposal					
Rail transportation and tipping fee at Subtitle D landfill	TON	362,250	\$50	\$18,113,000	Price from Waste Management for unit train service.
Inspection and Monitoring of Transload Facility					
Labor inspections during operations	FTE	2.5	\$75,000	\$188,000	Assumes 7 people during 4 months of dredging and 1 during subsequent 2 months
Environmental monitoring direct costs during offloading	MONTH	4	\$15,000	\$60,000	Cost for boat, monitoring equipment and chemistry analysis
Reporting	Year	1	\$40,000	\$40,000	Based on past experience
Total Estimated Cost				\$27,352,000	
Total Cubic Yards Handled Per Season				230,000	(7)
Total Tons Handled Per Season				345,000	Assumes 1.5 tons/cy unit weight
Estimated Cost Per Cubic Yard				\$119	
Estimated Cost Per Ton				\$79	

Notes:

- (1) Assumed total dredge volume taken to upland landfill through life of facility: 2,000,000 cy
 Alts B&C - ~200,000 to 1,260,000 cy (w/o in-water); 0 to 600,000 cy (w/ in-water)
 Alts D&E - ~440,000 to 2,300,000 cy (w/o in-water); 0 to 600,000 cy (w/ in-water)
 Alt F - ~2,200,000 to 6,698,000 cy (w/o in-water); 0 to 4,305,000 cy (w/ in-water)
- (2) Assumption for site development:
 - Pier/dock structure development/upgrade (~\$1.5M)
 - Addition of ~10,000 feet of new rail line & ~5 switches (~\$3.5M)
 - Creation of 12 to 15 acres of bermed stockpile areas holding up to 70,000 cy of sediment (~\$1M)
 - Mobilization of offloading equipment, off-road trucks, end loaders and other equipment (~\$0.5M)
 - Miscellaneous site improvements (utilities, water treatment, offices, etc.) (~\$1M)
- (3) Assumed another ~5 acres for support activities for total site need of 20 acres. Lease rate is yearly.
- (4) Assuming 3,000 to 5,000 tons/day loaded out, 100 tons/gondola, and 10-day turnaround produces 300 to 500 rail cars needed each year.
- (5) Assumes 230,000 cy/season and 1.5 tons/cy weight conversion.
- (6) Assumes 15-acre stockpile receiving 37 inches/year of rain over the 6-month stockpile time.
- (7) Assumes for transload volume per year:
 - 85 to 105 days of dredging (5 to 6 days/week) in a 120-day construction window
 - 700 cy/day/site and 2 to 3 cleanup sites being dredged at one time
 - 10 to 15 acres of 5-foot stockpiles can hold between 70,000 and 120,000 cy for shipping to the landfill after the dredging season is complete.

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Table 25. Upland Subtitle C Landfill Disposal Cost Buildup

Task	Unit	Quantity	Unit Cost	Total Cost	Basis/Notes
Transload Facility Development					
Transload facility permitting	LS	1	\$40,000	\$0	(1); Based on past experience normalized over total landfill disposal volume
Transload facility development	LS	1	\$7,500,000	\$86,000	(1,2); One time cost normalized over total estimated landfill disposal volume
Yearly property lease rate	ACRE	0	\$23,500	\$0	(3); Lease rate based on Port of Portland T6 public records.
Yearly gondola mobilization	Cars	0	\$4,000	\$0	(4); Car mobilization price from Waste Management
Materials Handling and Stabilization					
Materials handling from barge to upland stockpile	TON	34,500	\$6	\$207,000	(5); Offloading rate based on crane on dock and off-road trucks hauling to stockpile
Purchase Diatomaceous Earth (DE)	TON	5,175	\$94	\$486,000	Assumed 15% by weight mixing rate. DE price from Waste Management
Mix DE with dredged material to improve handling	TON	5,175	\$2	\$10,000	Cost based on end loader mixing DE and dredge material
Materials handling from stockpile to rail cars	TON	39,675	\$5	\$198,000	Cost assumes end loaders loading to rail cars on each side of stockpiles
Water treatment	1,000 gal	0	\$10	\$0	(6); Water treatment cost based on recent construction project.
Transportation and Disposal					
Rail transportation and tipping fee at Subtitle D landfill	TON	39,675	\$170	\$6,758,000	Price from Waste Management for truck transport and converted to unit train service.
Inspection and Monitoring of Transload Facility					
Labor inspections during operations	FTE	0.6	\$75,000	\$44,000	Assumes 7 people during roughly 1 month of offloading throughout the project
Environmental monitoring direct costs during offloading	MONTH	1	\$15,000	\$15,000	Cost for boat, monitoring equipment and chemistry analysis
Reporting	Year	0.25	\$40,000	\$10,000	Only a quarter of costs allocated to Subtitle C work
Total Estimated Cost				\$7,814,000	
Total Cubic Yards Handled Per Season				23,000	(7)
Total Tons Handled Per Season				34,500	Assumes 1.5 tons/cy unit weight
Estimated Cost Per Cubic Yard				\$340	
Estimated Cost Per Ton				\$226	

Notes:

- (1) Assumed total dredge volume taken to upland landfill through life of facility: 2,000,000 cy
- (2) Assumption for site development:
 - Pier/dock structure development/upgrade (~\$1.5M)
 - Addition of ~10,000 feet of new rail line & ~5 switches (~\$3.5M)
 - Creation of 12 to 15 acres of bermed stockpile areas holding up to 100,000 cy of sediment (~\$1M)
 - Mobilization of offloading equipment, off-road trucks, end loaders and other equipment (~\$0.5M)
 - Miscellaneous site improvements (utilities, water treatment, offices, etc.) (~\$1M)
- (3) Assumed another ~5 acres for support activities for total site need of 20 acres. Lease rate is yearly. Assumes lease paid by the Subtitle D disposal work since the Subtitle C is a fraction of the D volume.
- (4) Assuming 3,000 to 5,000 tons/day loaded out, 100 tons/gondola, and 10-day turnaround produces 300 to 500 rail cars needed each year. Assumes cars mobilized as part of Subtitle D disposal work.
- (5) Assumes 400,000 cy/season and 1.5 tons/cy weight conversion.
- (6) Assumes 15-acre stockpile receiving 37 inches/year of rain over the 6-month stockpile time. Assumes water treatment costs covered by the Subtitle D disposal work since the Subtitle C is a fraction of the D volume.
- (7) Only a limited amount of potential Subtitle C material is currently estimated (say 10% of total amount)

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Table 26. In Situ Treatment Cost Buildups

Assumption: Material placed as pellet directly on the mudline using similar techniques as Enhanced EMNR placement.

Open water placement rate calculation:

Assume that the same placement method as EMNR which is:

1,200 tons/day or

21,600 sf/day

Confined water placement rate calculation:

Assume that the same placement method as EMNR which is:

400 tons/day or

7,200 sf/day

Unit weight of Sediment:

Pounds per acre of Sediment: 58,080

CY per acre of Sediment: 48

Tons/cy of Sediment: 0.61

Assumes carbon is Sediment placed at a AC concentration of 6 pounds per square yard. Costs from Upal Ghosh

Material costs per acre: \$145,200

Assumes material placed with same method for EMNR

Tons per acre of material: 29 6 pounds/SY carbon, with Sediment at 50% carbon by weight or 58,080 pounds/acre

Open water placement

Daily placement costs: \$26,000

Placement costs per sf: \$1.2

Confined area placement:

Daily placement costs: \$18,000

Placement costs per sf: \$2.5

Material and placement cost per acre - open water: \$198,000

Material and placement cost per acre - confined area: \$254,000

Material and placement cost per square foot - open water: \$4.50

Material and placement cost per square foot - confined area: \$5.80

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Table 27. Equipment Rates

Equipment	Rate (Hourly)	Notes
150 Ton Crane	\$111.00	Rental rate Blue Book for construction equipment - 181.40 MT lift capacity
100 Ton Crane	\$87.00	Rental rate Blue Book for construction equipment - 99.80 MT lift capacity
Crane w/Barge	\$225.00	Rental rate Blue Book for construction equipment
Derrick Rig 100 Ton Capacity	\$776.00	Local contractor known equipment rate
Tug 250 HP	\$16.00	Rental rate Blue Book for construction equipment
Tug 700 HP	\$60.00	Rental rate Blue Book for construction equipment
Barge	\$54.00	Rental rate Blue Book for construction equipment
Barge 200x60	\$107.00	Rental rate Blue Book for construction equipment
Debris Barge	\$54.00	Rental rate Blue Book for construction equipment
Pile Barge	\$54.00	Rental rate Blue Book for construction equipment
Material Barge	\$54.00	Rental rate Blue Book for construction equipment
Transfer Barge	\$54.00	Rental rate Blue Book for construction equipment
Lash Barges	\$143.00	Local contractor known equipment rate
Barge (50')	\$31.00	Rental rate Blue Book for construction equipment - 50-foot length, 9-foot draft
Diffuser Barge	\$107.00	Rental rate Blue Book for construction equipment
Work Boat	\$56.00	Local contractor known equipment rate
Push Boat	\$40.00	Rental rate Blue Book for construction equipment - 45-foot length, 435 HP
Scows	\$68.00	National contractor known equipment rate
Material Scow	\$85.00	National contractor known equipment rate
PC 600 LC-7	\$82.00	Rental rate Blue Book for construction equipment
PC 300 LC-7	\$50.00	Rental rate Blue Book for construction equipment
Telebelt	\$65.00	National contractor known equipment rate
MOXY 31 Ton	\$32.00	Rental rate Blue Book for construction equipment
Dump Truck	\$32.00	Rental rate Blue Book for construction equipment
450 Loader	\$33.00	Rental rate Blue Book for construction equipment - 5.50 cubic yard
Clam Bucket (10 cy) - Debris	\$39.00	National contractor known equipment rate
Clam Bucket - Dredge and Cap	\$48.00	National contractor known equipment rate
Hydraulic Clam Bucket - Shoreline Dredging	\$60.00	National contractor known equipment rate
High Solids Pump	\$47.00	National contractor known equipment rate
Air compressor	\$5.00	Rental rate Blue Book for construction equipment
Welder/ Torch	\$22.00	Local contractor known equipment rate
ICE Vibratory	\$22.00	Rental rate Blue Book for construction equipment
Forklift	\$16.00	National contractor known equipment rate
Spuds	\$2.00	National contractor known equipment rate
Spud wells	\$1.00	National contractor known equipment rate
Pipe Welder	\$30.00	National contractor known equipment rate
Pug Mill	\$65.00	National contractor known equipment rate

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Table 28. Labor Rates

Labor Classification	Hourly Rate	Burden Rate	Sub Total	Total Rate	Bid Rate
Health and Safety Officer	\$30.60	\$9.18	\$39.78	\$39.78	\$40.00
Office Clerk	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Project Engineer	\$28.98	\$5.80	\$34.78	\$34.78	\$40.00
Project Manager	\$44.94	\$8.99	\$53.93	\$53.93	\$65.00
QA/QC Manager	\$30.06	\$6.01	\$36.07	\$36.07	\$40.00
Superintendent	\$44.94	\$13.48	\$58.42	\$58.42	\$65.00
Captain					\$54.00
Tug Captain					\$54.00
Derrick Captain					\$54.00
Foreman					\$54.00
Crane Operator					\$51.00
Dredge Operator					\$54.00
Boat Operator					\$50.00
Oiler					\$50.00
Operator					\$46.00
Laborer					\$37.00
Work Boat Laborer					\$37.00
Deck Hand					\$37.00
Teamster					\$37.00

Burden Rates	
Office Personnel	20.00%
Field Personnel	30.00%

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Table 29A. Material Costs

Material	Unit	FOB Plant Price	Barge Load Fee	Transport Fee ^a	Contractor Markup ^b	Total Unit Cost	Notes
Base Cap	Ton	\$12	\$0.5	\$0.5	\$1.63	\$14.6	Knife River quote #7838 8/23/2010 from Gordy Jarman
Armor Material A	Ton	\$15	\$0.5	\$0.5	\$2.00	\$18.0	Knife River quote #7838 8/23/2010 from Gordy Jarman
Armor Material B	Ton	\$15	\$0.5	\$0.5	\$2.00	\$18.0	Knife River quote #7838 8/23/2010 from Gordy Jarman
Armor Material C	Ton	\$15	\$0.5	\$0.5	\$2.00	\$18.0	Knife River quote #7838 8/23/2010 from Gordy Jarman
Armor Material D	Ton	\$15	\$0.5	\$0.5	\$2.00	\$18.0	Knife River quote #7838 8/23/2010 from Gordy Jarman
ODOT 100	Ton	\$27	\$0.5	\$0.5	\$3.50	\$31.5	Knife River quote #7838 8/23/2010 from Gordy Jarman
ODOT 200	Ton	\$27	\$0.5	\$0.5	\$3.50	\$31.5	Knife River quote #7838 8/23/2010 from Gordy Jarman
Organoclay Mat	SF	\$2.2	NA	\$0.1	\$0.29	\$3.0	Increased the cost 15% to account for overlaps. Cetco quote 10/4/10 from James Wang

Notes:


^a Assumes aggregate transported by barge and mat by truck to middle of harbor

^b Contractor Markup: 12.5%

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Table 29B. Vendor Quote



KNIFE RIVER
 AN MDU RESOURCES COMPANY
OR CCB #2101 WA #M0RSEB1169BR

Quote #: 7838

Project Name:
WILLAMETTE RIVER PROJECT

Delivery Address:
T-4 WILLAMETTE RIVER

Customer: *ANCHOR QEA*

Attention: *Micheal Crystal*
P: 206-287-9130
mjcrystal@anchorqea.com

Source	Product Name	FOB Plant Price	Transfer Delivery	Solo Delivery
Reichold	4"-3" SMALL COBBLES	\$15.00 Ton	\$22.00 Ton	
Reichold	2"-1" FINE GRAVEL	\$15.00 Ton	\$22.00 Ton	
Reichold	3/4"-1/4" FINE GRAVEL	\$15.00 Ton	\$22.00 Ton	
Reichold	3 1/2"-2 1/2" COURSE GRAVEL	\$15.00 Ton	\$22.00 Ton	
Reichold	GRAVELLY SAND	\$12.00 Ton	\$19.00 Ton	
Angell Quarry	CLASS 100 RIP RAP	\$20.00 Ton		\$27.00 Ton
Angell Quarry	CLASS 200 RIP RAP	\$20.00 Ton		\$27.00 Ton
Angell Quarry	CLASS 700 RIP RAP	\$25.00 Ton		\$32.00 Ton
Angell Quarry	CLASS 2000 RIP RAP	\$25.00 Ton		\$32.00 Ton

The following terms will apply to material purchased at Knife River for this project:

1. Prices include standard ODOT quality control and process control tests at the plant during production of the above quoted product(s). Acceptance of materials supplied by Knife River is at the plant at the time of production.
2. All gradations per ODOT specifications unless otherwise stated. Materials contain natural moisture only.
3. Credit terms net 15th of month following invoice.
4. Prices are for all materials and dump sites quoted inclusive.
5. Per ton pricing is based upon full load deliveries. Short loads are priced at truck time plus materials.
6. Knife River will attempt to secure adequate trucking with a minimum of 48 hours notice.
7. If applicable, dump site agreement must be signed before any export will be accepted.
8. Conversion rates & proctors are for information only & shall not be used to determine pay quantities.
9. No retainage of any material purchased.

Remarks:

1. PRICING IS FOR BUDGET PURPOSES.
2. KNIFE RIVER HAS A BARGE LOAD OUT FACILITY IF BARGING MATERIAL IS AN OPTION.
3. THE PRICE TO RENT KNIFE RIVER'S 6000 TON BARGE, KR-1, IS \$500 PER HOUR. THIS DOES NOT INCLUDE A TUGBOAT.
4. WE WILL LOAD THE ABOVE MATERIAL FROM THE REICHOLD SOURCE ONTO THE CUSTOMER'S BARGE FOR A FEE OF \$0.50 PER TON.
5. THE RATE AT WHICH WE LOAD KR-1 IS 1500 TONS PER HOUR. IF NEEDED, KNIFE RIVER WILL BACK THAT SPEED DOWN TO 1000 TONS PER HOUR TO ACCOMMODATE THE CUSTOMER'S BARGES LOADING CAPABILITY.

Salesman: Gordy Jarman
 Mobile: (503) 572-7236
 Office: (503) 944-3500
 gordy.jarman@kniferiver.com

Date of Origin: 8/23/2010
Quote Expires: 12/31/2010

Printed: 08/23/2010

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Table 30. Indirect Construction Cost Buildup

Daily Oversight and Project Management Including Environmental Monitoring			
<u>Labor</u>			
Task	Hrs/Week	Rate	Weekly Cost
Project manager	60	\$180	\$10,800
Field manager	60	\$125	\$7,500
Field technician	60	\$100	\$6,000
Field technician	60	\$80	\$4,800
Field technician	60	\$80	\$4,800
Office support	40	\$50	\$2,000
Total Labor			\$35,900
<u>Weekly Direct Cost (1)</u>			\$31,350
Total monthly cost:			\$292,000

Engineering Support During Construction			
<u>Labor</u>			
Task	Hrs/Week	Rate	Weekly Cost
Project engineer	20	\$180	\$3,600
Resident engineer	60	\$125	\$7,500
Office engineer	40	\$80	\$3,200
CAD	20	\$90	\$1,800
Total Labor			\$16,100
<u>Weekly Direct Cost (2)</u>			\$1,900
Total monthly cost:			\$78,000

Notes:

Assumptions for both:

- The field technicians can support both the field manager and the resident engineer

1) Assumptions:

- \$3,500 per week for boat, hydrolab, grab sampler, velocity meter, gps, misc equipment
- Six (6) water quality samples per week - 3 at site and 3 at background @ \$2,000 per sample
- Four (4) surface grabs per acre of dredge area. Assuming 1,000 cy/day dredge and 6 days/wk that is roughly 4 samples per acre
- \$3,400 per sample
- Per diem for field crew.

2) Assumption:

- Per diem, monthly site visit by Project Engineer

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Table 31. Discount Factors for Long Term Monitoring, Maintenance and Operations Costs

Alternative ¹	First Year of Monitoring, Maintenance and Operations (year)	Total Construction Duration ² (year)	Last Year of Monitoring, Maintenance and Operations
B-r	6	6	36
B-I (treat)	2	2	32
B-i(cap)	2	2	32
C-r	7	7	37
C-i(treat)	3	3	33
C-i(cap)	3	3	33
D-r	8	8	38
D-i(treat)	3	3	33
D-i(cap)	3	3	33
E-r	12	10	42
E-i(treat)	7	7	37
E-i(cap)	7	7	37
F-r	14	24	44
F-i(treat)	8	14	38
F-i(cap)	8	14	38

Notes:

1 = Assumes a 2.3% inflation rate for calculating the discount factor

-r = Removal Focused, incorporates a range of costs (low/high)

-i = in-situ focused, incorporates a range of costs (low/high)

(treat) - assumed in-situ treatment as the primary in-situ technology - used for the lower end cost.

(cap) - assumes engineered cap as the primary in-situ technology. Used for the higher end cost.

2 = The total construction is consistent with the durations presented in Appendix K of the draft FS. This is the final year of remedial construction activity with the final SMA to be constructed.

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Table 32. Draft Template Table for EPA Comment: Cost and Quantity Estimates by sub-SMA

sub-SMA ID	sub-SMA Area (Acres)	Integrated Focused						Removal Focused					
		Treatment/ Cap Area (Acres)	Removal Volume (CY)	Low Cost	Cap Area (Acres)	Removal Volume (CY)	High Cost	Cap Area (Acres)	Removal Volume (CY)	Low Cost	Cap Area (Acres)	Removal Volume (CY)	High Cost
B-NC-9607	2.25	-	39,145	\$ 11,743,481.36	-	51,918	\$ 20,767,144.00	-	39,145	\$ 11,743,481.36	-	51,918	\$ 20,767,144.00
B-OW-WZ-9613	1.58	1.58	-	\$ 1,584,465.87	2.99	-	\$ 2,988,902.85	-	37,606	\$ 11,281,803.30	-	44,127	\$ 17,650,742.36
B-OW-WZ-9524x	2.02	2.02	-	\$ 2,016,437.25	3.92	-	\$ 3,920,513.91	-	34,616	\$ 10,384,697.02	-	40,909	\$ 16,363,460.04
B-OW-9611	0.61	0.61	-	\$ 605,429.39	2.84	-	\$ 2,838,250.69	-	30,793	\$ 9,237,965.40	-	40,077	\$ 16,030,973.57
B-FD-6107	2.30	-	28,158	\$ 8,447,251.31	-	36,837	\$ 14,734,908.73	-	28,158	\$ 8,447,251.31	-	36,837	\$ 14,734,908.73
B-OW-9509	0.44	0.44	-	\$ 444,844.41	2.01	-	\$ 2,008,434.48	-	25,801	\$ 7,740,280.20	-	31,489	\$ 12,595,796.97
B-NC-9615	0.74	-	18,611	\$ 5,583,231.08	-	28,882	\$ 11,552,705.74	-	18,611	\$ 5,583,231.08	-	28,882	\$ 11,552,705.74
B-OW-WZ-9614	0.85	0.85	-	\$ 854,743.15	1.30	-	\$ 1,302,424.66	-	18,427	\$ 5,528,054.77	-	23,501	\$ 9,400,504.48
B-FD-9601	0.65	-	19,910	\$ 5,973,012.00	-	23,109	\$ 9,243,480.20	-	19,910	\$ 5,973,012.00	-	23,109	\$ 9,243,480.20
B-SL-WZ-9529x	1.14	1.14	-	\$ 1,135,505.36	2.50	-	\$ 2,500,476.55	-	19,182	\$ 5,754,731.89	-	22,406	\$ 8,962,220.68
B-NC-9001	0.88	-	17,904	\$ 5,371,103.08	-	19,011	\$ 7,604,519.00	-	17,904	\$ 5,371,103.08	-	19,011	\$ 7,604,519.00
B-OW-9610	0.11	0.11	-	\$ 112,744.13	0.55	-	\$ 546,572.27	-	15,872	\$ 4,761,735.79	-	18,434	\$ 7,373,662.59
B-FD-3102x	0.52	-	14,880	\$ 4,463,930.19	-	18,308	\$ 7,323,228.92	-	14,880	\$ 4,463,930.19	-	18,308	\$ 7,323,228.92

Notes:

sub-SMAs are organized from the highest cost (Removal focused) to the lowest.

Dummy values provided. Pending EPA comment this table will be populated with actual data from the draft FS.

This draft template table only shows 10 sub-SMAs. After EPA approval, the actual table would include all 387 sub-SMAs.

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